REPORT RESUMES

ED 014 560 VT 002 929

OFFICE MACHINES.

BY- HILL, MARCELLA P.

NEW JERSEY STATE DEPT. OF EDUCATION, TRENTON

RUTGERS, THE STATE UNIV., NEW BRUNSWICK, N.J.

PUB DATE JAN 67

EDRS PRICE MF-$1.50 HC-$14.16 352P.

DESCRIPTORS- *OFFICE OCCUPATIONS EDUCATION, *OFFICE MACHINES, *STUDY GUIDES, GRADE 11, *DEAF EDUCATION, *SPECIAL EDUCATION, RETARDED CHILDREN, CLERICAL OCCUPATIONS,

DESIGNED FOR STUDENTS' READING IN THE JUNIOR YEAR OF HIGH SCHOOL, THIS MANUAL PRESENTS AN INTRODUCTION TO THE VARIETY OF POSITIONS HELD BY CLERICAL WORKERS AND AN IDEA OF THE MACHINE SKILLS, KNOWLEDGE, AND ATTITUDE THAT WILL BE EXPECTED IN BUSINESS. IT WAS DEVELOPED BY THE AUTHOR AND SCHOOL FACULTY FOLLOWING THE COURSE OF STUDY APPROVED BY THE BOARD OF EDUCATION AND WAS TESTED IN VARIOUS CLASSROOMS. THE MATERIAL WAS DESIGNED FOR ONE YEAR OF SHOP WORK AT A LOW LEVEL IN A SCHOOL FOR DEAF OR RETARDED STUDENTS. THE INSTRUCTOR SHOULD BE CERTIFIED. UNITS ARE -- (1) THE MEANING OF OFFICE PRACTICE CLASS, (2) TYPEWRITERS, (3) MIMEOGRAPHS, (4) FLUID DUPLICATORS, (5) FLEXOWRITER, (6) PHOTOCOPYING MACHINES, (7) ADDING MACHINES, (8) CALCULATING MACHINES, (9) BOOKKEEPING MACHINES, (10) VARITYPER, AND (11) JOB TITLES. AN ACHIEVEMENT TEST, PROJECTS, AND A VOCABULARY FOLLOW EACH UNIT. EACH LESSON GIVES OBJECTIVES, TOPIC INFORMATION, ASSIGNMENTS, ILLUSTRATIONS, AND A VOCABULARY. THIS DOCUMENT IS ALSO AVAILABLE FOR $2.00 FROM VOCATIONAL-TECHNICAL LABORATORY, RUTGERS UNIVERSITY, 10 SEMINARY PLACE, NEW BRUNSWICK, NEW JERSEY 08903. (PS)

STATE OF NEW JERSEY
DEPARTMENT OF EDUCATION
DIVISION OF VOCATIONAL EDUCATION

ED014560

OFFICE MACHINES

MARCELLA P. HILL, INSTRUCTOR
MARIE KATZENBACH SCHOOL FOR THE DEAF
WEST TRENTON, NEW JERSEY

VT002929

MEMORANDUM

TO: The ERIC Clearinghouse on Vocational and Technical Education
The Ohio State University
980 Kinnear Road
Columbus, Ohio 43212

FROM: (Person) Benjamin Shapiro (Agency) Vocational Div.-Curriculum Laboratory

(Address) School of Education-Rutgers; 10 Seminary Place, New Brunswick, N J 08903

DATE: July 10, 1967

RE: (Author, Title, Publisher, Date) Marcella P. Hill; OFFICE MACHINES
January, 1967

Supplementary Information on Instructional Material

Provide information below which is not included in the publication. Mark N/A in each blank for which information is not available or not applicable. Mark P when information is included in the publication. See reverse side for further instructions.

(1) Source of Available Copies:
Agency Vocational Division - Curriculum Laboratory
Address 10 Seminary Place, New Brunswick, N J 08903
Limitation on Available Copies as available Price/Unit $2.00
(quantity prices) same

(2) Means Used to Develop Material:
Development Group School faculty and author
Level of Group State wide
Method of Design, Testing, and Trial Follows course of study approved by Board of Education and tested in various interested classrooms.

(3) Utilization of Material:
Appropriate School Setting Shop work at low level
Type of Program School for deaf or retarded group
Occupational Focus Business occupation
Geographic Adaptability No limits
Uses of Material Students reading
Users of Material Students

(4) Requirements for Using Material:
Teacher Competency Certified instructor
Student Selection Criteria Students who would succeed in business offices running various equipment
Time Allotment One year

Supplemental Media --
Necessary ____
Desirable X (Check Which)

Describe Overhead projectuals

Source (agency) none
(address)

State of New Jersey
Department of Education
Vocational Division

U.S. DEPARTMENT OF HEALTH, EDUCATION & WELFARE
OFFICE OF EDUCATION

THIS DOCUMENT HAS BEEN REPRODUCED EXACTLY AS RECEIVED FROM THE PERSON OR ORGANIZATION ORIGINATING IT. POINTS OF VIEW OR OPINIONS STATED DO NOT NECESSARILY REPRESENT OFFICIAL OFFICE OF EDUCATION POSITION OR POLICY.

OFFICE MACHINES

MARCELLA P. HILL, Instructor

CHARLES M. JOCHEM, Superintendent

Marie Katzenbach School for the Deaf
West Trenton, New Jersey

Vocational-Technical Curriculum Laboratory
Rutgers · The State University
10 Seminary Place
New Brunswick, New Jersey

JANUARY, 1967

TO THE TEACHER

This book has been compiled for use in both individual and class projects. Some of the lessons are arranged so that class participation is divided, with two or three students taking part in each step of the learning process.

The writer feels that this material should be only a small percentage of the overall teaching plan. To be effective, it must be combined with a great many demonstrations, projectuals, and field trips.

There are two purposes of this book: to give the students a bird's-eye view of the variety of positions held by clerical workers, many of which will be within their capabilities, and also to give them an idea of the machine skills, knowledge, and the attitude that will be expected of them for any given position in business.

The informal injection of thought questions is effective in encouraging oral participation by the student. The vocabulary lists which are included are meant to be used as a basis for dictionary work.

It should be understood that the individual units may be taught in any sequence. The operation of the machines studied will have to be done on a flexible rotation plan. No order of rotation is suggested, except the following:

> The mimeograph and the spirit duplicator before the Verifax photocopier.
>
> The full-keyboard adding machine first, followed by the 10-key adding machine, then the calculators.
>
> Work on the posting machine should be preceded by the study and understanding of banking practices in the General Business course.

These units are intended to cover the Office Practice work for two years, classes held one and one-half hours daily, five days a week. However, the theory work on all machines should be completed before the end of the junior year. This theory work will have to be supplemented with studies on the Office and its departments, and an intensive study of filing. We feel it is wise to introduce these related subjects as soon as possible, in view of the probability that the students will find summer employment after their junior year. For this same reason, it should be possible to expose each student to each machine before the junior year is completed. At the beginning of the senior year, those students who did not complete the project on any machine would be expected to do so.

Included in this course on machine projects is supplemental work requested by the school staff. It is preferable that this work be accepted only insofar as it is varied and has instructional value. It is also important that the work be accepted with liberal deadlines for completion.

I have included in this manual an achievement test and a vocabulary list following each unit, with a compilation of both at the back of the book.

I want to express my thanks to Mr. Joseph Squitierri, who is presently an art school student, for helping me so skillfully with sketches as they were needed.

Recognition is also given to all the office-machine manufacturers and the retail stores that I contacted and found so generous with material and illustrations for use in this text. Recognition is given in courtesy lines throughout the publication as the visuals are used.

Finally, I want to state my belief in the necessity of giving the students an understanding of the fundamentals of bookkeeping, banking, billing, letter forms, and the use of data that necessitate the specific operation of any machine they may be called upon to use. Inasmuch as we are helping our students prepare for lifetime careers in business - which involve adaptation, change, promotions, and new responsibilities, as well as the actual skill and techniques of office-machine operation - teaching them mechanical skills only would be to fail in our obligations both to them and to the field of business.

Marcella P. Hill

TABLE OF CONTENTS

UNIT I - THE MEANING OF "OFFICE PRACTICE" CLASS

Page
Lesson 1 - The Content of This Class 1
Lesson 2 - The Office Practice Student 4
Lesson 3 - What an Office Is 6
Lesson 4 - The Office Employee 8
Lesson 5 - The Student as a Future Employee 10
Lesson 6 - The Employer's Rating Sheet 14
Achievement Test 15A

UNIT II - TYPEWRITERS

Lesson 1 - Manual Typewriters 16
Lesson 2 - IBM Electric Selectric Typewriter 19
Lesson 3 - Electric Standard Typewriter - Features 21
Lesson 4 - IBM Electric Standard Typewriter - Features 24
Lesson 5 - IBM Electric Executive Typewriter - Features 27
Lesson 6 - IBM Electric Executive Typewriter - More Features 30
Lesson 7 - IBM Electric Executive Typewriter - Erasures 33
Lesson 8 - IBM Electric Executive Typewriter - Shadow Printing ... 35
Lesson 9 - IBM Electric Executive Typewriter - Justifying 37
Lesson 10 - General Rules 40
Lesson 11 - Care of Electric Typewriters 42
Achievement Test 43A
Projects 43B

UNIT III - MIMEOGRAPHS

Lesson 1 - General Information 44
Lesson 2 - Preparation for Typing a Stencil 46
Lesson 3 - Preparing a Stencil 49
Lesson 4 - Proofreading the Stencil 53
Lesson 5 - Mimeoscopes - Two Kinds - What They Are 54
Lesson 6 - Mimeoscope - How To Use It 56
Lesson 7 - Rex Rotary Mimeograph - Parts and Their Uses 59
Lesson 8 - How to Operate the Mimeograph 60
Lesson 9 - Stencil Insets 64
Lesson 10 - Rex Rotary ElectroRex - How It Is Used 66
Care of the Mimeograph 67
Problems and Some Answers 68
Projects 68A

UNIT IV - FLUID DUPLICATORS

Page
Lesson 1 - What the Fluid Duplicator Is 69
Lesson 2 - Parts of the Machine -- Their Names and Use 70
Lesson 3 - More Facts About the Machine 72
Lesson 4 - Preparation of a Master 75
Lesson 5 - How to Operate It 78
Achievement Test 81A
Projects 81C

UNIT V - FLEXOWRITER

Lesson 1 - What It Is 82
Lesson 2 - Features, Names and Uses of Parts 84
Lesson 3 - More Features 86
Lesson 4 - Switches and Special Keys 87
Lesson 5 - Punching a Tape 90
Lesson 6 - Error Correction While Typing 92
Lesson 7 - Error Correction After Typing 93
Lesson 8 - How to Read a Tape 95
Lesson 9 - How to Punch an Address Tape 96
Lesson 10 - Margins and Tab Stops 98
Lesson 11 - Stencils and Masters 100
Lesson 12 - Care of the Flexowriter 101
Achievement Test 101A
Projects 101B

UNIT VI - PHOTOCOPYING MACHINES

Lesson 1 - What Kind of Machine the Photocopier Is 102
Lesson 2 - General Information on Different Types of Copying Machines 105
Lesson 3 - Verifax Legal-Size Photocopier-Names and Use of Parts 108
Lesson 4 - Legal Size Wet Model-How To Get Ready To Use It .. 110
Lesson 5 - Legal Size Wet Model-How To Use It 113
Lesson 6 - Signet Wet Copier-How To Use It 116
Lesson 7 - Wet Machines-General Information 118
Lesson 8 - Dry Photocopiers-Types of Machines 120
Achievement Test 121A
Projects on Verifax Wet Machines 121C

UNIT VII - ADDING MACHINES

Page
Lesson 1 - Full-Keyboard Machine-General Information 122
Lesson 2 - Monroe Full-Keyboard Machine-Parts and Their Use .. 124
Lesson 3 - Full-Keyboard Machine-Facts and Symbols 126
Lesson 4 - Full-Keyboard Machine-Operation 128
Lesson 5 - 10-Key Adding Machine-General Information 129
Lesson 6 - Monroe 10-Key Adding Machine-Parts and Their Use .. 131
Lesson 7 - 10-Key Adding Machine-Rules for Operating 133
Achievement Test 134B
Pre-Adding Machine Drill 134C
Projects 134F

Facts to be Considered in Connection with Units VII, VIII, and IX 134H

UNIT VIII - CALCULATING MACHINES

Lesson 1 - The Calculator - What It Is 135
Lesson 2 - Full-Keyboard Semi-Automatic Rotary Calculator - Parts and Their Use 137
Lesson 3 - Full-Keyboard Rotary Calculator - How To Add and Subtract 139
Lesson 4 - Full-Keyboard Semi-Automatic Rotary Calculator - How To Multiply 141
Lesson 5 - Full-Keyboard Automatic Rotary Calculator - How To Multiply 143
Lesson 6 - Full-Keyboard Automatic Rotary Calculator - How To Divide 145
Lesson 7 - 10-Key Rotary Calculator -General Information 147
Lesson 8 - Remington 10-Key Printing Calculator - Parts and Their Use 148
Lesson 9 - Remington 10-Key Printing Calculator - Operation of Special Parts 151
Lesson 10 - Remington 10-Key Printing Calculator - Repeated Addition 154
Lesson 11 - Remington 10-Key Printing Calculator - Repeated Subtraction 156
Lesson 12 - Remington 10-Key Printing Calculator - Decimals 158
Lesson 13 - 10-Key Remington Printing Calculator - Multiplication . 160
Lesson 14 - 10-Key Remington Printing Calculator - Division 163
Lesson 15 - 10-Key Remington Printing Calculator - Division of Decimals 165
Lesson 16 - 10-Key Remington Printing Calculator - Dual Addition or Subtraction 167

UNIT VIII - CALCULATING MACHINES (CONT'D)

Page
Lesson 17 - Key-Driven Calculators - General Information 169
Lesson 18 - Hand-Operated Calculators - How To Use Them ... 170
Achievement Test 171C
Projects 171D

UNIT IX - BOOKKEEPING MACHINES

Lesson 1 - What Bookkeeping Machines Are 172
Lesson 2 - What "Posting" Means 175
Lesson 3 - Posting Machines - General Information 176
Lesson 4 - Posting Machines - Posting a Payroll 178
Lesson 5 - 10-Key Underwood-Olivetti Posting Machine -- How To Post Bank Accounts 180
Achievement Test 181A
Projects 181B

UNIT X - VARITYPER

Lesson 1 - What the VariTyper Is 182
Lesson 2 - The Operator's Touch 184
Lesson 3 - The Various Kinds of Type Available 185
Lesson 4 - How To Insert Fonts 186
Lesson 5 - How To Select Fonts 188
Lesson 6 - Some Features of the Machine 190
Lesson 7 - Horizontal Spacing 194
Lesson 8 - Vertical Spacing (No Lineomatic Mechanism) 196
Lesson 9 - Vertical Spacing (With Lineomatic Mechanism) 199
Lesson 10 - Horizontal Centering 201
Lesson 11 - Different Models 202
Lesson 12 - How to Justify 204
Lesson 13 - Trouble-Shooting 209
Achievement Test 210A
Projects 211

UNIT XI - JOB TITLES

Lesson 1 - Description of Jobs 217

Vocabulary 220

Machine Projects I Have Completed 242

Bibliography 243

UNIT 1 - THE MEANING OF "OFFICE PRACTICE" CLASS

Content of This Class **Lesson 1**

OBJECTIVE: To learn of the different things that will be studied in this class.

INFORMATION:

Let us see what sorts of things you will be doing in this class. This Office Practice class will be different from any other you have been in. Sometimes each of you will be doing a different kind of work. You will be working alone on certain work and will not know what the others are doing. But at other times you will all be doing the same thing. You will be working independently of each other, but very closely with the teacher.

There will be six different kinds of work that you will learn in this class.

1. You will learn about the machines we have in this room. You will be shown pictures of them and shown how they work. You will also be shown pictures of many other machines that you might find in an office where you might work someday, even though we do not have those machines here to show you. No matter how many machines we can let you practice on here in school, there will always be others in some offices.

   You will study about the parts of the machines and what you should be able to do on each one.

   You will also study, all together, about other things that you should know about an office before you go to work in one.

   All of this study is called Theory. It is study and it will usually be done right here in our classroom. Most of the time, we will spend two days each week on this theory work.

2. After you have learned about a machine, you will begin work on it. You will be told what to do. We call this work Projects. You will be expected to read directions and follow them. Then you will give the finished work to the teacher. You should do the very best work that you can.

3. You will often be asked to do work for other teachers. After you can operate a machine well enough, you will be given some of the outside work to do. A job card will be made out for each student. As you do each job outside of your assigned class work, a record of this work and how well you do it will be kept on this card.

4. When you are a senior, you may be assigned to one of the offices here in the school for a portion of each day.

5. Each of you will take turns being the office clerk. You will have duties to do, and will be expected to help the teacher in whatever way she may need you.

6. Another very important thing to learn in this class is good attitude. What does attitude mean? You have learned before that it means how you act towards people and toward things. This is so important for you to learn. You may often be asked to do things that you prefer not to do, just as you will when you get a job. It is best if you can just do the work and act pleasant about it.

Now you know how this class will be different from any other you have been in. Your work will be varied, and you will not always be doing the same thing as the rest of the class is doing.

ASSIGNMENT:

1. Do you want to work in an office when you graduate from school?

2. Do you think it is important for you to be in a class like this one?

3. Why are tests important in school?

4. Are tests used in hiring office workers?

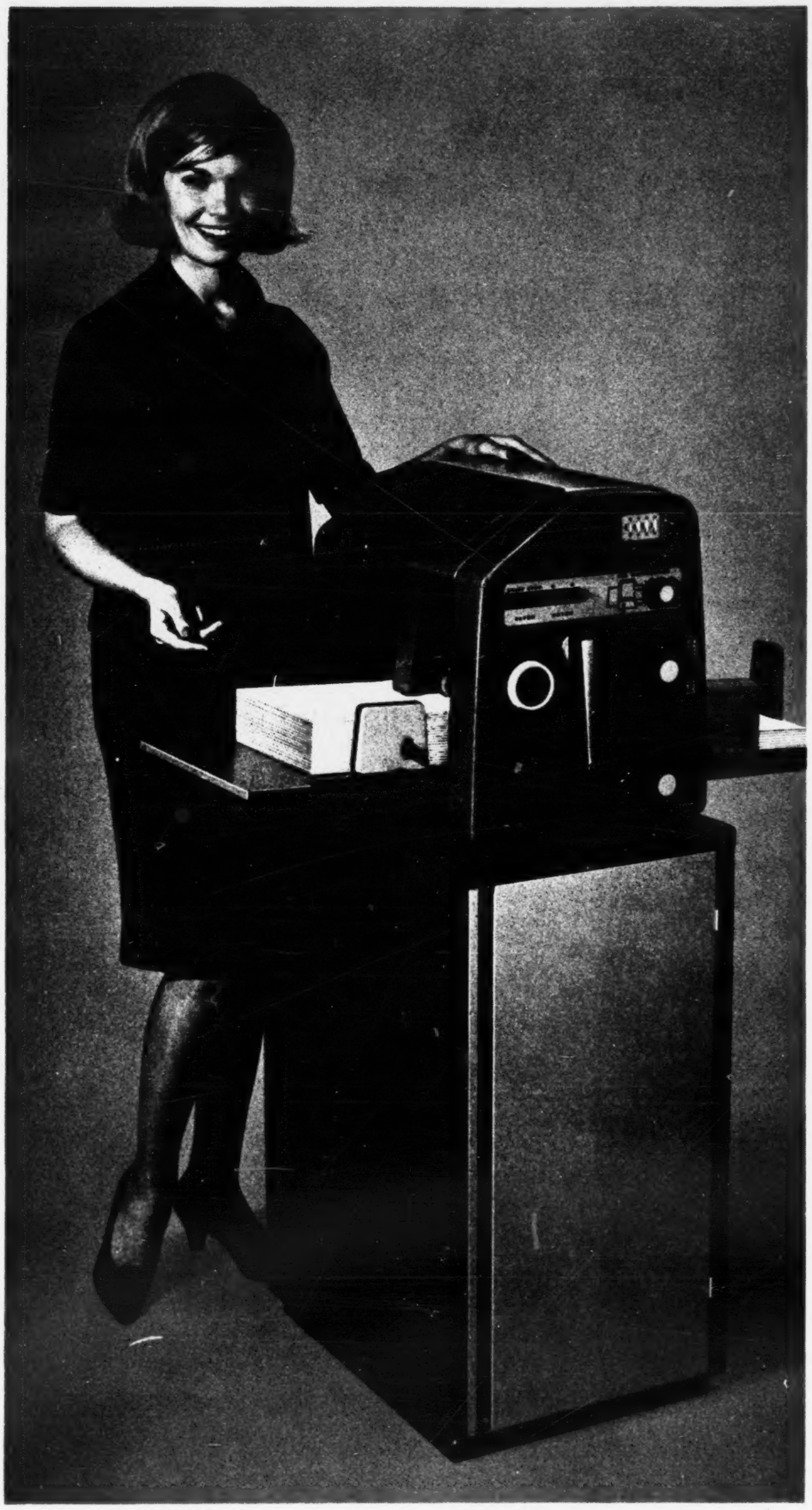
5. If your teacher tells you that you will have a test the next day, how will you prepare for it?

6. Is there a value in being given a test without being told in advance?

7. What is the value of your doing outside jobs (for the school) as part of your training?

VOCABULARY

theory	thē′ ō rĭ	learning to know about things (rather than learning by doing)
operate	ŏp′ ə rāt	to make something go, to make a machine work
assign	ȧ sīn′	to tell you that you have a certain job to do
attitude	ăt′ ĭ tūd	how you act about anything
independently	ĭn dē pĕn′ dĕnt lĭ	by yourself, not waiting for someone else to help
project(n.)	prŏ′ jĕkt	something planned; planned work
superior	sōō pēr′ ĭ ər	better, far above; also a person who is over you in a job
content(n.)	kŏn′ tĕnt	what is in a container
		what we will do in this class



REX ROTARY ELECTRIC MIMEOGRAPH

UNIT I - THE MEANING OF "OFFICE PRACTICE" CLASS

The Office Practice Student — Lesson 2

OBJECTIVE: To learn how to be a good student in this class.

INFORMATION:

Below are some important rules that a good Office Practice student needs to know:

1. She will take time to read all directions.
2. She will follow all directions.
3. If she does not understand the directions, she will ask the teacher.
4. She will accept all criticism intelligently and graciously.
5. She will proofread accurately, checking against a paper that is correct.
6. She will use all the Office Practice time working.
7. She will know where to find all supplies.
8. She will show initiative, dependability, and a deep sense of responsibility.
    a. She will attack a job intelligently, and plan the assignment to get the best results she can.
    b. She will keep at the job until it is completed properly.
    c. If she thinks she has a helpful suggestion, she will talk to the teacher about it.
    d. She will not make unnecessary suggestions, just to waste time.
9. She will work cooperatively with the group and with the teacher in the "give and take" of successful work.
10. She will not be satisfied with "good enough," but will always do her best work.
11. She will put her working materials away at the end of the class, and will leave her desk clean.

12. She will make the dictionary an important part of her equipment.

ASSIGNMENT:

1. When should you do your proofreading?
2. When we proofread, why do we check our work against a copy we know is correct?
3. Is it important to ask questions if you do not understand?
4. How can a dictionary help a student?
5. How can a dictionary help an office worker?

VOCABULARY:

intelligently	ĭn tĕl′ ĭ jĕnt lĭ	using your thinking ability; as if you are thoughtful and wise
graciously	grā′ shŭs lĭ	with a pleasant manner
initiative	ĭ nĭsh′ ĭ ȧ tĭv	going ahead "on your own"; thinking up your own ideas; if there is no one to tell you - you find something to do
dependability	dē̍ pĕn′ dȧ bĭl′ ĭ tĭ	being the sort of person who can be trusted to do what she has said she will do
responsibility	rē̍ spŏn′ sĭ bĭl′ ĭ tĭ	being willing to do what needs to be done; acting in a grown-up rather than a childish manner; understanding what is right and doing it
equipment	ē̍ kwĭp′ mĕnt	what you use to work with; what you use for each job

UNIT I - THE MEANING OF "OFFICE PRACTICE" CLASS

What an Office Is — Lesson 3

OBJECTIVE: To learn about some of the kinds of work that are done in an office.

INFORMATION:

Have you been in an office? Let's talk about some of the work that people might have been doing.

FIRST: You might have seen the receptionist. She would help you find whomever you came to talk to.

SECOND: You might have seen the telephone operator. She probably was working at a switchboard talking to people in the company or to people outside of the company. She may have been taking a message and writing it down, ready to give to someone else.

THIRD: Probably you saw someone else typing and another person using an adding machine. Perhaps one girl was filing and still another person might have been operating a bookkeeping machine.

This was work done for the person who was the girls' superior, or for the company who was the employer. All of this work had to be done by some one. We call this kind of work "paper work" or "keeping records."

You will know how to do most of these jobs when you are finished here and ready to go on a job.

ASSIGNMENT:

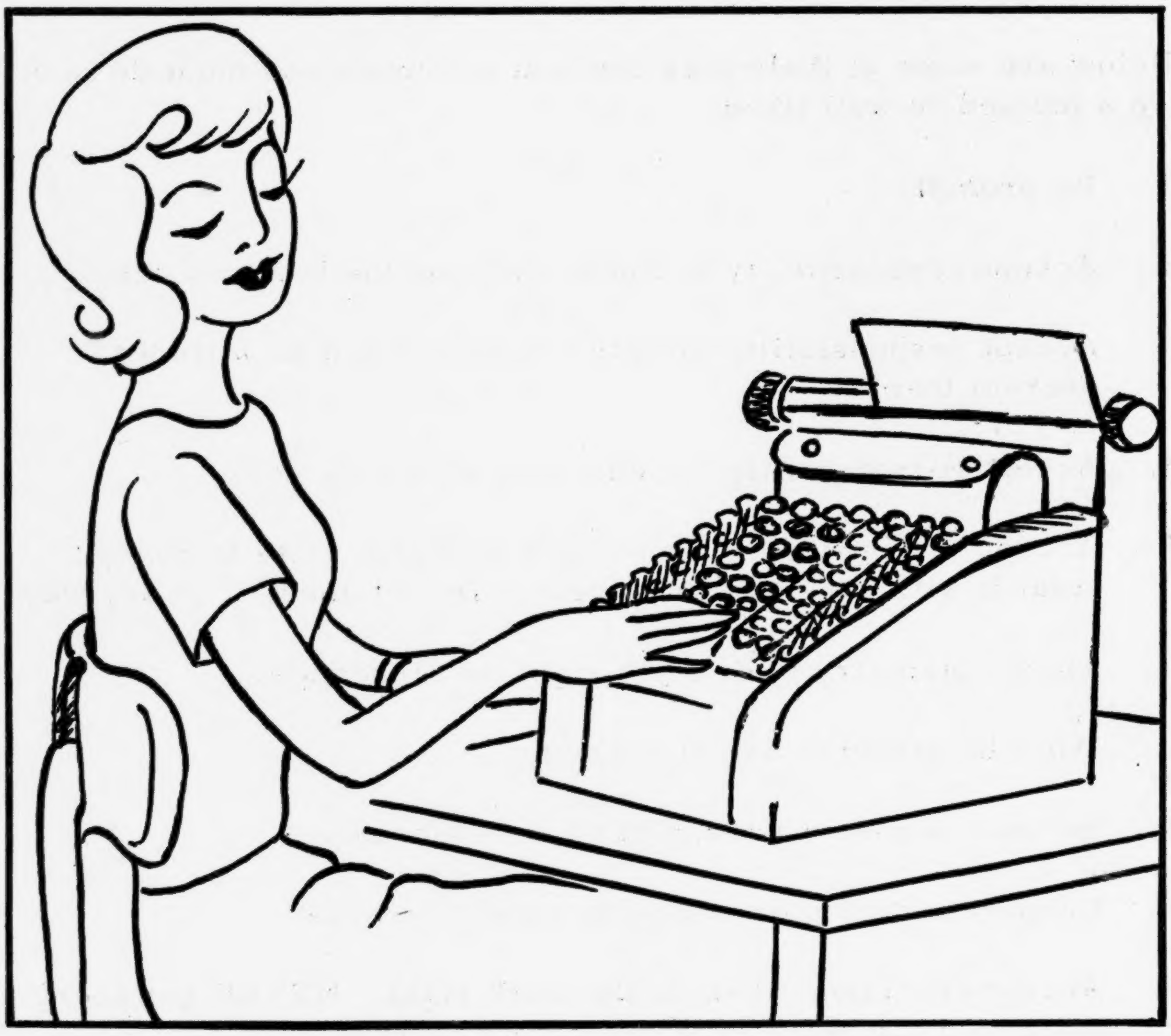
1. What is an office?
2. Before you can go out and work at a job like some of those mentioned, what will you have to do?
3. Do you think people work very hard in an office?
4. What does "paper work" mean?
5. Could you be a telephone operator?

6. If you have had one year of typing, do you think you know enough now to get a position?

7. What will you have to do first, before you can do a good job in your work?

VOCABULARY:

receptionist	rē sĕp′ shŭn ĭst	a person whose job is to greet people and help them
switchboard	swĭch′ bôrd	where all telephone calls come in from the outside of the building, and through which all calls go out
message	mĕs′ ĭj	a letter or notice from one person to another



UNIT I - THE MEANING OF "OFFICE PRACTICE" CLASS

The Office Employee — Lesson 4

OBJECTIVE: To learn some of the things that you will have to do when you find employment.

INFORMATION:

Below are some of the things that you as employees must do in order to keep a job and be well liked.

1. Be prompt.
2. Accept responsibility to finish each job the best you can.
3. Accept responsibility for your mistakes and be willing to correct them.
4. Accept responsibility for checking your own work.
5. Accept responsibility for using a machine. Use it nicely, treat it with care, leave it clean. Do not abuse it in any way.
6. Think; plan; try to do a job right the first time.
7. Don't be afraid to ask questions.
8. Be neat in your work and in your appearance.
9. Cooperate with everyone with whom you work.
10. Accept criticism, then do the work right. NEVER get angry when told that work is wrong or poorly done.

ASSIGNMENT: True or False

____ 1. Suppose you work in an office that begins work at 9 a.m. You should arrive at the office at ten minutes after nine.

____ 2. You are responsible for picking up and cleaning up your own desk, but you should never help anyone else get finished with her work.

____ 3. In an office, every girl works at just her own work. She is never asked to do any different jobs.

____ 4. Suppose you were hired to do filing. One day you had your work all finished, and another girl needed help to get her typing done. You have time so you could help her finish.

____ 5. You must try real hard to do a job right the first time you try.

____ 6. The most important thing in typing is to type real fast.

VOCABULARY:

accept	-	ăk sĕpt′	-	to receive, to take willingly
employee	-	ĕm ploi ē′	-	a person who works for a boss
prompt	-	prŏmpt	-	on time, or ahead of time
appearance	-	ȧ pēr′ ȧns	-	how you look; how something looks
abuse (v.)	-	ȧ būz′	-	to use something in a way that causes harm or damage to it

UNIT I - THE MEANING OF "OFFICE PRACTICE" CLASS

The Student as a Future Employee **Lesson 5**

OBJECTIVE: To learn that the way you act in school is forming habits that will help or hinder you when you get a position working for someone else.

INFORMATION:

We have talked about some of the things that you will do in this class, and some of the things you will be expected to do on a job. Today, let's talk about how all this that you are learning in school will help you when you get on a job. If you try to learn the right way now, you will be helped; if you learn to do things wrong now, the habits will not help you, they will hinder you.

1. Promptness
   If you are not in class on time, or at your desk where you work, on time, you are not doing your best, are you? You are wasting time.

   In school, come in, get pencils sharpened, and all materials together before you begin a job; or come in and be ready for the teacher to teach you. If you are on a job, get your materials ready, and be working at the right time.

2. Attitude
   How do you act? Do your actions make the teacher think that you are interested in learning?

   When you work, go to your job in the morning, and be ready and eager to begin work. Always be cheerful. Try not to take any of your troubles to work with you.

3. Responsibility
   Take care of the machines you use. Keep them clean and your desk dusted. Do not be afraid of cleaning up what some one else has left. You are responsible for keeping your work area clean. Some one else may not clean up, but you be sure that you accept your responsibility.

   Supplies are kept in a closet. Whenever you use anything from the closet, you will sign a slip that is there, so that the teacher can keep an inventory file on the supplies.

You will find something like this in an office. Be sure you do your part in helping to keep the supplies neatly piled and correctly counted, so the person in charge will know when to reorder.

4. Cooperation
Be willing to do whatever you are asked to do. You must be flexible. Perhaps you will come into class here, or to your work, expecting to type. But you might be asked to do a different type of work. Be cooperative. Appear happy to do whatever you are asked to do.

5. Willingness to help
Always be ready to help when your teacher or your employer asks you to, even though it is not the kind of work that you like best.

6. Neatness
Be neat, both in your person and in your work. Wear clean, neat, and clean-smelling clothing.

   Never give any person a bad-looking paper. Do not turn in badly done erasures or STRIKEOVERS (this is a very lazy habit), or smudges or pencil-or pen corrections.

7. Proofreading
Do your own proofreading. Do not EVER expect your employer to do it for you.

8. Know your machine
When you begin to work on a different machine here in class, you will be asked to practice on it first, so you can learn the touch, and all about the machine. No machine is quite like another one. Get acquainted with your machine before you begin a job.

9. Understand your directions
This is important to do while in school and it is also VERY IMPORTANT when you get on a job. Read the directions. Ask questions. Write if you need to. DO NOT BEGIN UNTIL YOU ARE SURE YOU KNOW WHAT TO DO! Five minutes spent in learning what to do may save you hours of redoing a job where you misunderstood the directions.

10. Waste

a. Do not waste TIME.
Be in your classroom or in your office on time.
Get all the materials you will need before sitting down to work.
Be sure you understand. Do not waste time doing the work wrong.
Do not try to work faster than you can work accurately.
It wastes time to erase errors often. Each of you know how fast you can work. Some are faster than others. Do the best you can do.

USE TIME WISELY

b. Do not waste MATERIALS.
If you did not understand what you were to do, and had to do the work over again, you were wasting the paper you used the first time.
If you try to work faster than you can, and have to start over, you will be wasting materials.

USE MATERIALS WISELY

11. Summary

These are all hints to help you learn how important your school work is to you. Learn to work well and you will do better work when you get a position.
REMEMBER - your teacher is here to show you how to become a better office worker.
REMEMBER - your employer will be paying you for every moment you are in the office. He will expect your best from you. He will expect you to put in a full day's work and to do a good job.

Your teachers and your employer are eager to help you.
You must do your part by letting them help you!

ASSIGNMENT:

1. Why is it important to know the directions before you start to work?
2. When we waste time, do we waste money, also?
3. Is it every worker's responsibility to help keep the supply closet neat and orderly?
4. Are all typewriters exactly alike?
5. What does "know your machine" mean?

VOCABULARY:

hinder	hĭn' dẽr	to keep someone from succeeding or making progress
hint (n.)	hĭnt	an idea that you get across without coming out directly and saying it
inventory	ĭn' vĕn tôr ĭ	a list or count of the different things that you have or that a company has
smudge	smŭj	a dirty spot, such as a spot from a poor erasing job

Employer's Rating Sheet

Lesson 6

OBJECTIVE: To learn how an employer will know how well his workers are doing, and how well they are getting along with other people.

INFORMATION:

When you go to work at your first job, it will probably be in a large company. There will be many other girls, and women and men working there also.

You may never know what kind of work some of the workers are doing, because you will not just walk around and watch them, but you will probably be working at the same kind of work that some of them are doing. There will be at least one of these people who will be your immediate supervisor. She will be the one who knows best what kind of work you are doing and how well you are doing it. This person will be the one who can take time to help you, and the one to whom you may go to ask questions.

She will know everything that you do. After you have finished work that you think is perfect, she is the one who will know how well you have done. After you have been working a while, let us hope she does not find many errors in your work, because someone superior to her will ask her how well you are doing your work. She will have to give you a rating - a mark or grade, just as we do in school.

So now you know that someone will be rating the work you turn out. Others will be rating you on other things.

Below are some of the things you may be rated on:

1. appearance
2. dress
3. posture
4. speech
5. willingness to write if you need to
6. temperament (do you get angry easily?)
7. knowledge of job
8. attitude

All these things are important in keeping your job, and in any raises in your salary that you may get. So do your best to develop the proper skills, habits, and attitudes NOW.

ASSIGNMENT:

Go over this lesson very thoroughly and learn every part.

VOCABULARY:

rate (v.)	-	rāt	-	to see how good someone is, and how she compares with others
supervisor	-	sū′ pẽr vī zẽr	-	a person over you in a job, who can instruct you
immediate	-	ĭm ē′ dĭ ĭt	-	next in line, with no one in between
probably	-	prŏb′ ə blĭ	-	likely to be so; we think so
temperament	-	tĕm′ pẽr ȧ mĕnt	-	the way you feel about things and people. (Are you happy? Do you like to be with people? Do you get angry easily?)

UNIT I - ACHIEVEMENT TEST

TRUE OR FALSE

_____ 1. We have every kind of office machine there is, right in this room.

_____ 2. "Theory" means learning about something.

_____ 3. Classroom work has very little to do with the work you will do on a job.

_____ 4. It is important that you always do your best work.

_____ 5. Planning how to do a job wastes time. Just sit down and go to work.

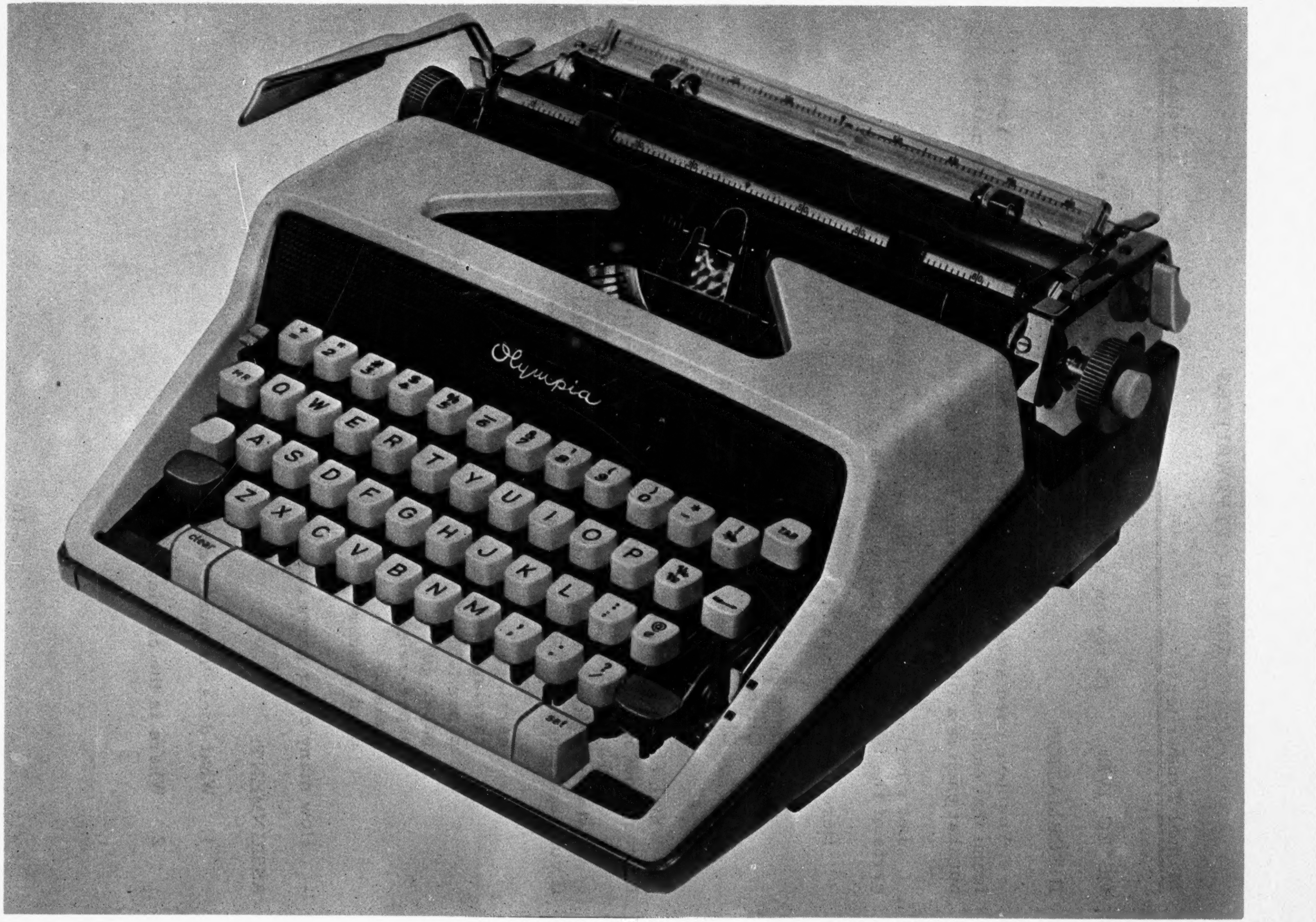
_____ 6. In office work, you must learn to be courteous and kind to every other person who is working there.

_____ 7. You must always ask questions if you do not understand what you are supposed to do.

_____ 8. Your machine and your work area are your responsibility to keep clean.

_____ 9. There will always be someone else in the office to do your proofreading for you.

_____ 10. Your boss is more interested in the work you do than in your troubles.


Olympia
clear
set
tab

OLYMPIA MANUAL TYPEWRITER

UNIT II - TYPEWRITERS

Manual Typewriters — Lesson 1

OBJECTIVE: To review some facts about manual typewriters.

INFORMATION:

You have used several different makes of manual typewriters. You found that each make of typewriter is almost the same as the other makes, but that each is a little bit different from the others too.

Let's review the names of the typewriters and the names of the parts of the typewriters that you may have used.

Here are the names of some well-known makes of typewriters:

Hermes
Olivetti
Olympia
Remington
Royal
Smith-Corona
Underwood

Which of these have you used? Which of these are in this classroom? Do you know of any other makes (brands) of typewriters?

Below is a list of some of the parts on the manual typewriter. See if you can remember where they are and what they do:

carriage
carriage-return lever
paper table
paper guide
paper-release lever
platen
card holders
platen knobs
keyboard
tab set key
backspace
tab clear key
shift keys
paper bail

How many other parts can you name?

ASSIGNMENT:

1. What does "manual" mean?
2. Where is the carriage-return lever?

3. Does every typewriter have a shift key?
    a. What is the purpose of the shift key?
    b. What does the shift lock do?

4. What is a margin?

5. Tell two different ways to set the margins.

6. Why does the machine have paper bail rollers?

7. Will your typing be done well if you type lightly on a manual machine?

8. When would you use the paper release lever?

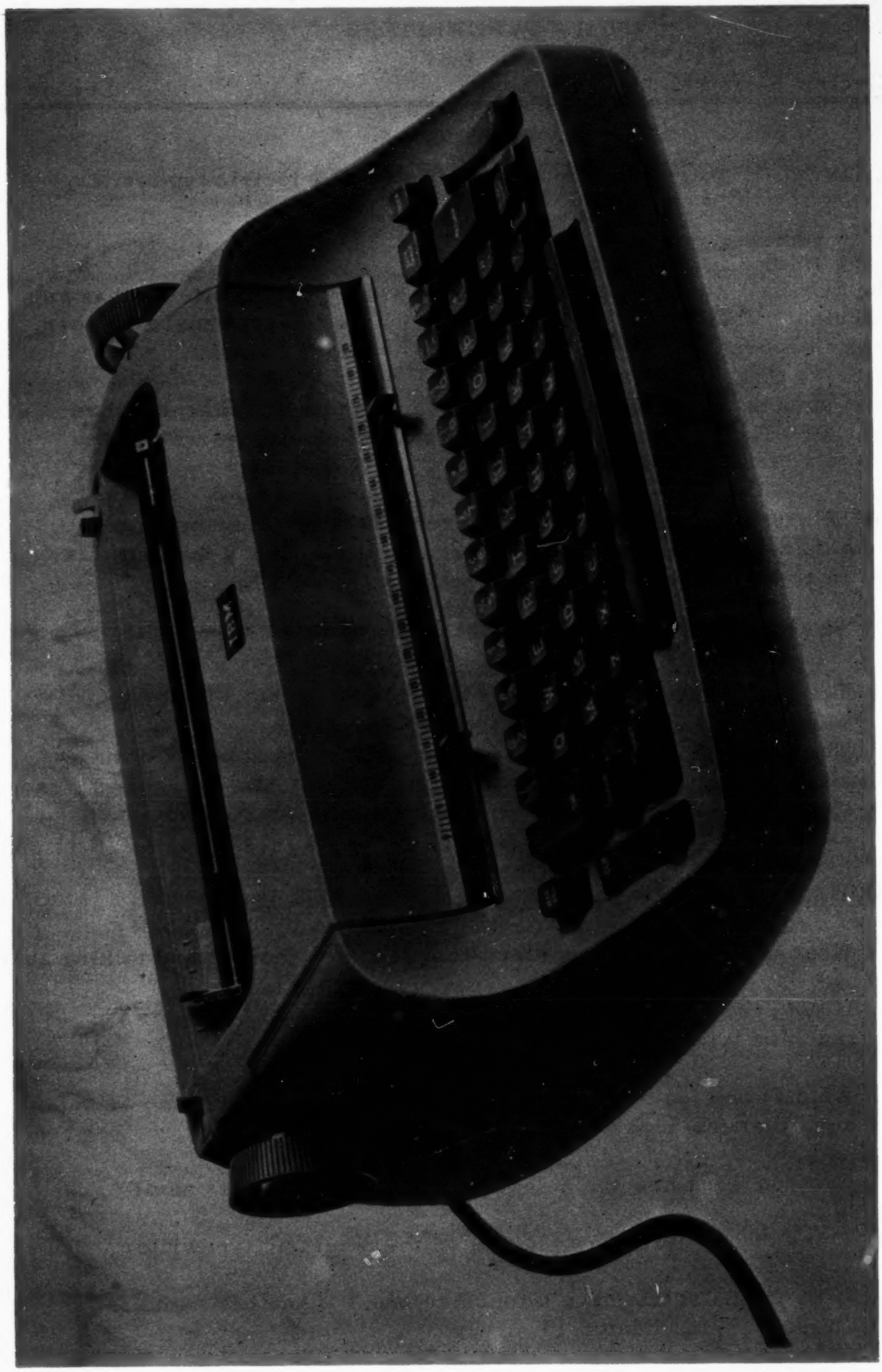
9. When would you use the underline?

10. Tell how the variable line spacer helps the typist.

VOCABULARY:

objective	-	ŏb jĕk′ tĭv	-	the thing you want to know or learn; what you are aiming at
information	-	ĭn fôr mā′ shŭn	-	facts; the things you are being told
manual	-	măn′ ū̇ ȧl	-	operated by hand, not by electricity
several	-	sĕv′ ẽr ȧl	-	a few; more than two, but not very many
carriage	-	kăr′ ĭj	-	the long part of the typewriter which moves back and forth as you type
lever	-	lē′ vẽr	-	a rather long, hard piece of material, attached on one end, which will move a larger object
shift	-	shĭft	-	to move or change
Smith-Corona	-	smĭth′-kŏ rō′ nȧ	-	name of a typewriter
Underwood	-	ŭn′ dẽr wo͝od	-	name of a typewriter

Royal	roi′ əl	name of a typewriter
Remington	rĕm′ ng tŭn	name of a typewriter
IBM	ī bē ĕm	name of a typewriter
Hermes	hẽr′ mēz	name of a typewriter
Olympia	ō lǐmp′ ē ȧ	name of a typewriter



IBM ELECTRIC TYPEWRITER

IBM Electric Selectric Typewriter

Lesson 2

OBJECTIVE: To review some facts about the Selectric typewriter.

INFORMATION:

The Selectric typewriter is one kind of electric typewriter. It is an IBM machine. This means that it is made by the International Business Machines Corporation.

Most students find it is easier to type on an electric machine than on a manual. The electric machine works more easily, so we need to use a lighter "touch" when we type on it.

The Selectric machine is quite different from all other machines. The parts therefore are different. There are three things that put this machine in a class all by itself.

1. The carriage does not move.
2. The type is on a round ball, which is called the "element."
3. There are several different styles of type, each on its own element. If you have several different elements, you may change the style of your type just by taking out one element and putting in a different one.

ASSIGNMENT:

1. What is the name of the electric typewriter that we are talking about?
2. If the carriage does not move on the Selectric, how does the machine type?
3. What is one feature on this machine that is not the same as on any other machine?
4. Can you think how the Selectric may have gotten its name?
5. Think of one more new feature on the Selectric typewriter.
6. Does the Selectric have a touch control? (Another name is "impression indicator.")

7. What are the two kinds of typewriters?

8. How would you know if a typewriter is electric or manual?

9. Do we need to use a heavy touch on the Selectric?

10. Does this machine have "repeat" keys?

VOCABULARY:

Selectric	sē lĕk′ trĭk	the name of this electric typewriter
element	ĕl′ ĕ mĕnt	the part of the Selectric typewriter that has the type on it
feature	fē′ tū̮r	something special about a thing; something that stands out and attracts attention
impression	ĭm prĕsh′ ŭn	something produced by pressing - a mark, stamp, or print
indicator	ĭn′ dĭ kā tẽr	something that shows or points out

THE ELECTRIC STANDARD TYPEWRITER

UNIT II - TYPEWRITERS

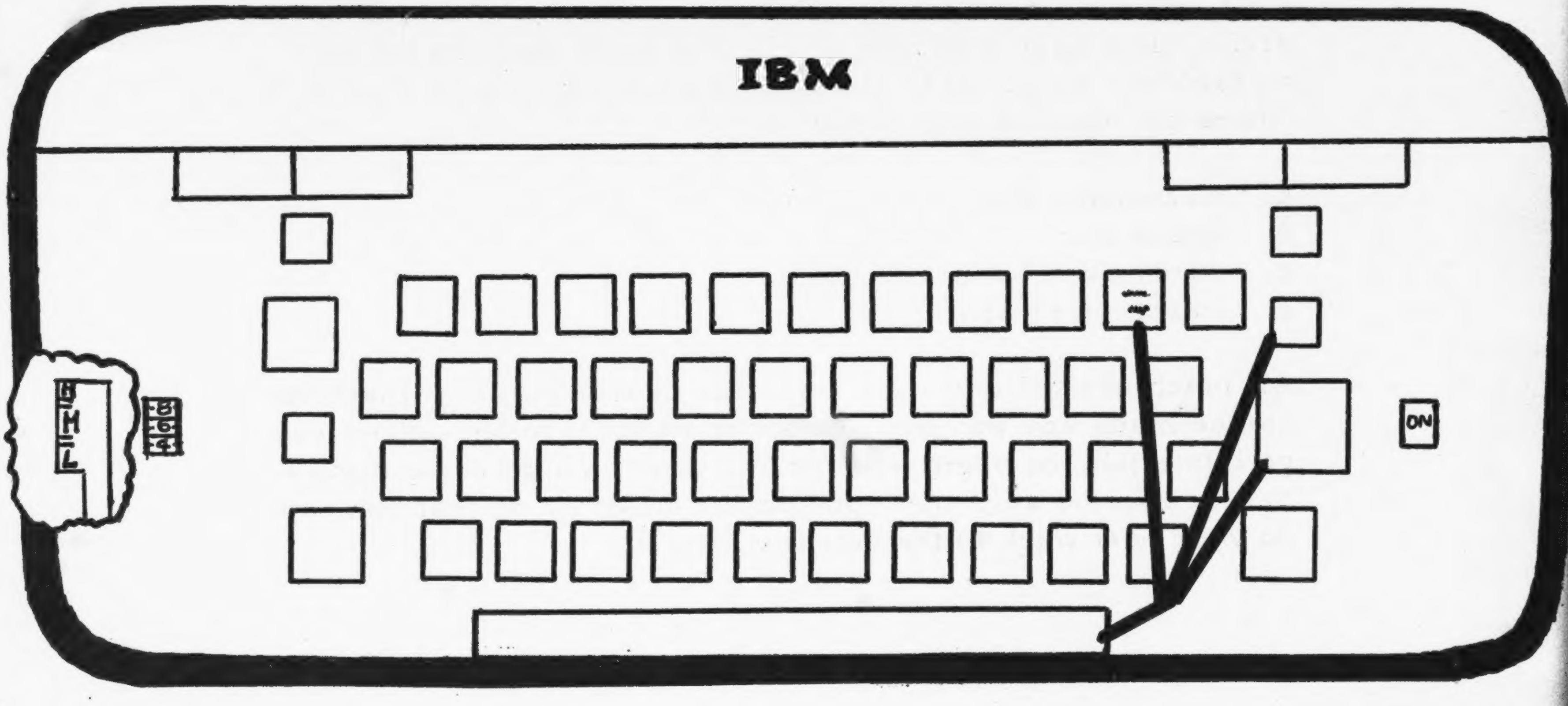
Electric Standard Typewriter--Features **Lesson 3**

OBJECTIVE: To learn about important parts on electric typewriters.

INFORMATION:

You already know that you use a light touch on an electric typewriter. When you type only one sheet, your touch should be so light that you cannot feel the type impression on the back of your paper.

Sometimes, however, we have need for a heavier (harder) stroke. If we are using carbon paper and typing more than one sheet at a time, then we need a firm, heavier stroke. Most electric machines have a part on them to help get the right stroke. Below is an illustration that shows two special parts on the IBM typewriter. Let's look at them.



1. The impression indicator is found on the left of the keyboard. Notice that it has two parts. One part may be seen through a window; the other part may be seen only by opening the cover on the typewriter. The numbers on the part you can see can be changed by touching a lever underneath the part with the fingers of your left hand. To change the red wheel, open the cover by pulling towards you the two little levers under the right and left corners; then lift the cover. Then you may turn the second wheel, with red letters, to the same setting as on the black numbered wheel. The higher number means that the keys are hitting harder.

   a. IBM: use a low number for stencils
   use the lowest number for underlining

   b. Royal: L- for 3 carbons and for stencils
   M- for 6 to 8 carbons
   H- for more carbons

   For regular typing on any machine, adjust the indicator according to your need.

2. Repeat keys are found on the right of the illustration. Repeat keys may be called "Typamatic" keys. This means that the keys will strike over and over again without your having to strike them each separate time. You must depress the key as far down as possible and hold it down, to make it repeat. There are usually four repeat keys:

   a. backspace key
   b. space bar
   c. hyphen and underline key
   d. carriage return

   All machines will not have the same repeat keys. A machine can be made any way that the buyer wants it to be. When you go into a job, or begin to work any time on a machine that is new to you, be sure that you find all about it, so that you can do your best work in the quickest time.

ASSIGNMENT:

1. How many parts are there to the impression indicator?
2. Can you see both parts of the impression indicator while you are typing?
3. How can you open the cover of an IBM typewriter?
4. Can you think why you must use a low number on the impression indicator when underlining?
5. How can you make the "Typamatic" keys repeat?

VOCABULARY:

standard	-	stăn′ dẽrd	-	an ordinary, regular typewriter, not a special one; anything that is used as the one with which others are compared
underscore	-	ŭn′ dẽr skôr	-	same as "underline"; to make a line under something
firm	-	fûrm	-	hard, solid, steady
illustration	-	ĭl ŭs trā′ shŭn	-	a picture of something
adjust	-	ȧ jŭst′	-	to make a small change in something to make it right
depress	-	dē prĕs′	-	to push down
Typamatic	-	tīp ȧ mă′ tĭk	-	a name given to a repeat key on certain electric typewriters

UNIT II - TYPEWRITERS

IBM Electric Standard Typewriter--Features Lesson 4

OBJECTIVE: To learn more things about the IBM electric typewriter.

INFORMATION:

You will surely agree that everything you learn about any typewriter will help you do a better job and do it faster.

1. Let us go back first and review about the repeat keys.

   a. If you want to backspace hurriedly, you must depress the backspace key and hold it down.

   b. If you want to underline a whole line of typing, you must hold down the backspace key and the underline key at the same time. Do not forget to shift first.

   c. If you want to space ahead fast, you must depress the space bar as far as you can and the machine will space ahead for as long as you hold down the space bar.

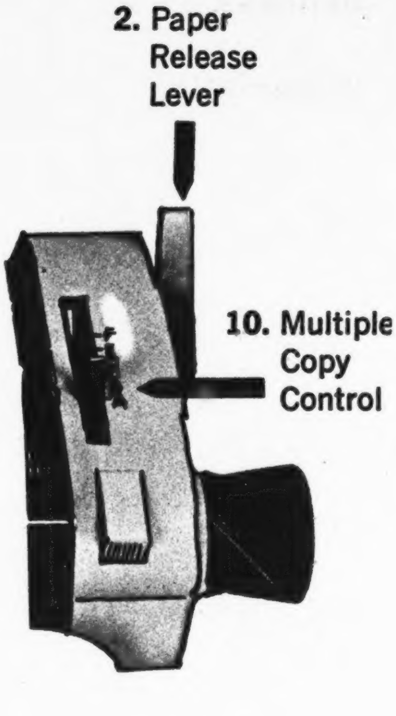
   d. If you want to space down, you must hold down the carriage return key until the platen has rolled the paper up as far as you want it.

2. There are more special keys that will help you to work faster and better:

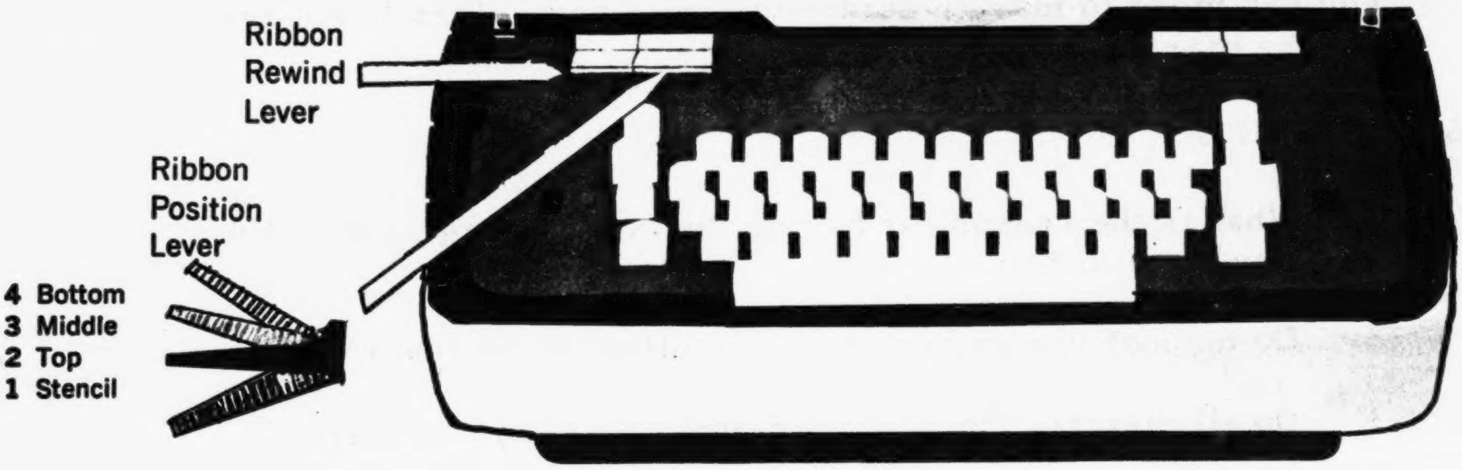
   a. The multiple copy control lets you move the platen forward (towards you) or backward (away from you) with the control lever, to make enough room for the number of sheets of paper you want to insert into the carriage at one time.

      Set the lever at A for 1 to 4 copies
      Set the lever at B for 4 to 7 copies
      Set the lever at C for 7 to 10 copies
      Set the lever at D for 11 to 13 copies
      Set the lever at E for 14 to 17 copies
      Set the lever at F for 18 to 20 copies

      Notice that you move the lever back one letter every time you add three more sheets of paper.



b. The carriage return is not a lever, but a return key; tap it with the little finger of the right hand.



c. The ribbon control (IBM typewriters) has four positions, as follows: (See illustration above.)

4. Bottom of ribbon
3. Middle of ribbon
2. Top of ribbon
1. Stencil

3. How to reset margins on this machine:

a. To reset the left-hand margin:

(1) Touch the carriage return key to find the present setting of the left margin.
(2) Depress and hold down the margin reset key.
(3) Depress the margin release lever (with the reset key still down); move the carriage all the way to the extreme right. Then move left again to the desired setting.
(4) Release the margin reset key. The margin is set.

b. To reset the right-hand margin.

(1) Touch the tab key until the carriage moves left to the right margin.
(2) Depress and hold down the margin reset key.
(3) Depress the margin release lever and move the carriage to the extreme left. Then right again, to the desired setting.
(4) Release the margin reset key. The margin is set.

Note: If you have trouble setting the margin, or feel a "tick" as the carriage moves, the margin stops have been pushed together. Use the reset key, and by moving the carriage slowly either way, you can move to margin holder to either end. Then begin again for the margin setting.

ASSIGNMENT:

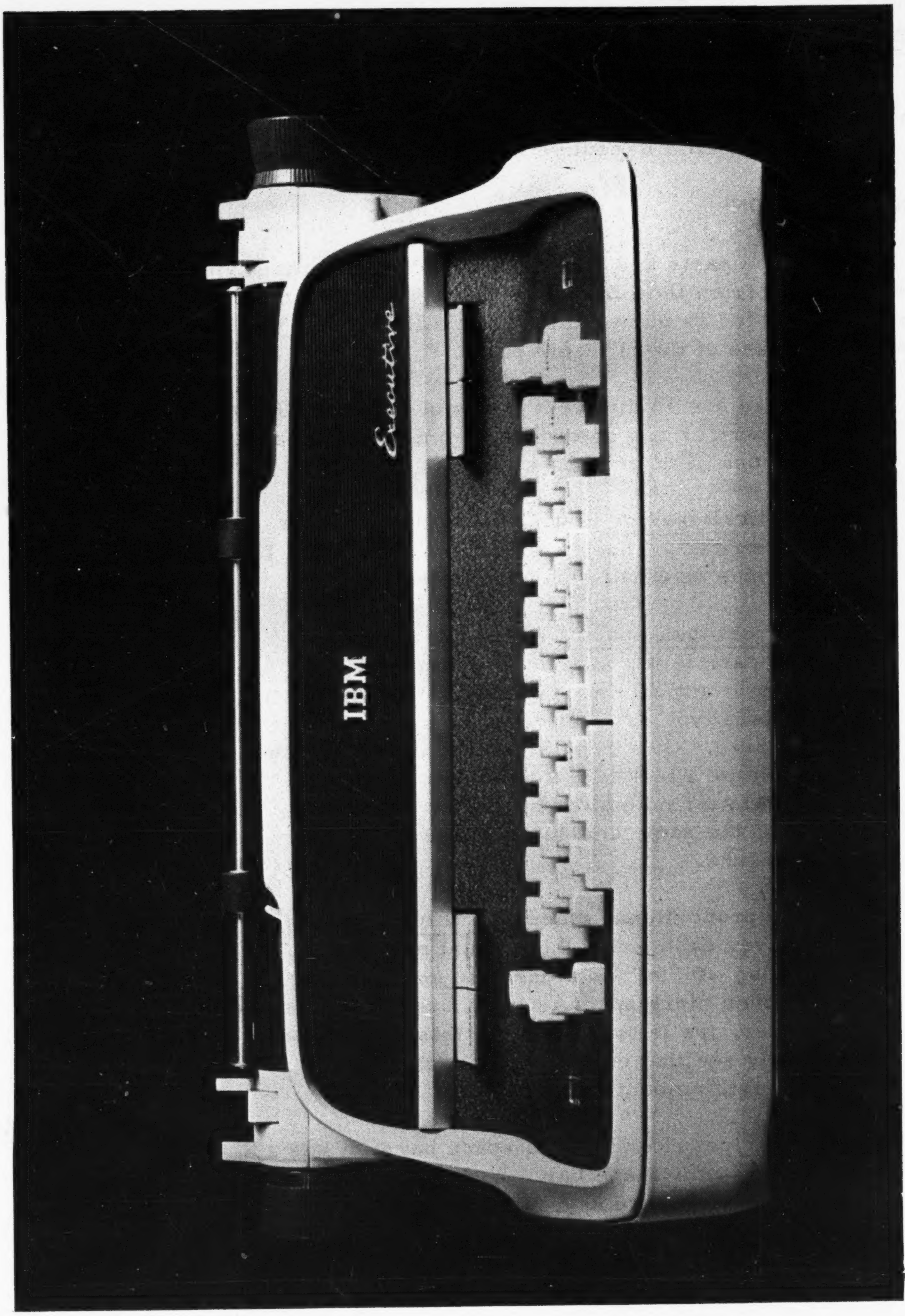
1. What is the reason for having the multiple copy control on a typewriter?
2. Do manual typewriters have a multiple copy lever?
3. Do all electric typewriters have repeat keys on them?
4. Do the Typamatic keys have to be the same keys on all typewriters?
5. Why is it a good thing to use the repeat keys whenever you can?
6. How do you return the carriage on an electric typewriter?
7. Will a ribbon on the IBM typewriter last longer than one on another machine? Explain.
8. Will all electric typewriters have exactly the same special parts?
9. What is the first thing to do when setting a new margin?

VOCABULARY:

control - kŏn trōl′ - something that lets you work a machine or a part of a machine in just the way you need it

hurriedly - hûr′ ĭd lĭ - fast, in a hurry

IBM ELECTRIC EXECUTIVE TYPEWRITER


Executive
IBM

UNIT II - TYPEWRITERS

IBM Electric Executive Typewriter--Features

Lesson 5

OBJECTIVE: To learn how to use some of the different parts on the IBM Executive typewriter.

INFORMATION:

There are parts and names on the IBM Executive typewriter that are different from those on other typewriters. If you are going to use this machine for as many things as it will do, then you must learn the names and uses of the different parts.

1. There are 16 different styles of type. An Executive typewriter can be ordered from the manufacturer in any one of these styles.

2. Vertical spacing is wider than on a regular, standard typewriter. There are 58 lines on a sheet 11" long and 29 lines on a half sheet of paper.

3. Proportional spacing (horizontal) means that each letter is given the amount of room it actually needs. Other typewriters type each letter in an equal amount of space. On a regular or standard machine, the letters look like this. You can see that each letter no matter how wide or narrow, takes the same amount of space as all the rest take.

   iiiii
   ooooo
   wwwww
   mmmmm

   IBM proportional spacing is natural spacing. It gives each letter the amount of room it needs. An "m" is wider than an "i," so it is given more space. On an Executive typewriter, the letters look like this. You can easily see that each of these letters takes a different amount of room.

   iiiii
   ooooo
   wwwww
   mmmmm

4. This typewriter has two space bars; it has a 2-unit space bar and a 3-unit space bar. With these two space bars, and the 1-unit backspace key, you can do many things to make your typing look neat and professional.

The width of the letters is measured in units. The smallest letter is 2 units wide, and the widest letter is 5 units wide. The backspace key is the only key which gives 1-unit spacing.

The 2-unit space bar is used for general typing. However, you can be very flexible and do many different things by using the 1-unit backspace key in combination with either the 2-unit or 3-unit space key.

The 3-unit space bar is usually used when typing a lot of different figures and for making a straight right-hand margin.

5. We learned that the letters can take either 2, 3, 4, or 5 units of space, according to how wide the letter is.

   Following is a table of Unit Measurements that you must know before you can begin typing on this machine. This is the table for a typewriter with MODERN type.

MODERN TYPE

Lower case

1 unit	backspace key	
2 units	f l i t j ; '	(7 keys)
4 units	w	
5 units	m	
3 units	all the other keys	(34 keys)

Upper case

2 units	( ) : I	(4 keys)
3 units	S J ! # $ ¢ * - + "	(10 keys)
5 units	M W	
4 units	all the other keys	(27 keys)

ASSIGNMENT:

Use the word or words in the column at the right to complete the following sentences correctly: (Notice that there are more answers than there are questions. You will not use all the answers.)

1. The vertical lines of typing, on an Executive are _________ _________ than they are on a standard typewriter.

Choose from:

5 spaces
units
1 space
58
natural
closer together
66
farther apart

2. "Proportional" spacing means ____________ spacing.

3. On the Executive typewriter, the width of the letter is measured by ____________.

4. There is _________ key which is one unit wide.

5. There are __________ lines on a sheet of paper 8½" x 11", when the typing is done with an Executive typewriter.

VOCABULARY:

flexible - flĕk′ sĭ bl - can be easily changed or made different

measurement - mĕzh′ ẽr mĕnt - a quantity; how much or how many or how long

natural - năt′ ū răl - as it really is, not changed

proportional - prō pôr′ shŭn əl - according to size

unit - ū′ nĭt - one part; one amount

vertical - vûr′ tĭ kȧl - the up-and-down direction

UNIT II - TYPEWRITERS

IBM Electric Executive Typewriter--More Features — Lesson 6

OBJECTIVE: To learn about more unusual parts on the Executive typewriter.

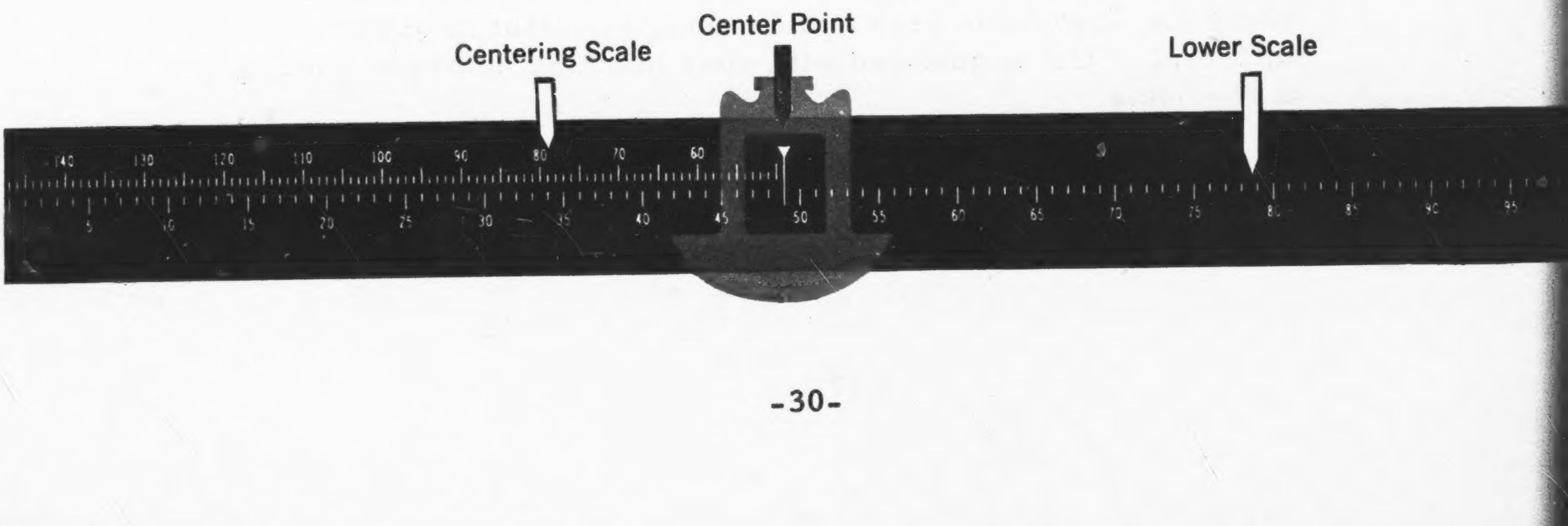
INFORMATION:

In this lesson there are five special things we want to learn about.

1. Copy guide. There are three things to remember about the copy guide:
   a. The top part of the scale is measured in inches. It can be used for setting margins correctly and for getting the proper tab settings.
   b. It is a very good erasing table.
   c. It keeps the paper from rolling around the platen.
2. Automatic word expander. When we want to make words or headings or captions look bigger or more important, we can do this by simply depressing the expand lever. This is above and to the left of the keyboard, in the place where the "ribbon rewind" is on a standard typewriter. When we depress this, one extra unit of space is added between each letter. (This means they are farther apart.) Also, the 2-unit space bar will space 3 units, and the 3-unit space bar will space 4 units.

AUTOMATIC WORD EXPANDER

3. Front paper scale. This has the same numbers on it as the copy guide has, and it does make it easier for you to set the margins and tab stops. It also helps to center properly.



4. How to center

   a. Use both the centering scale (upper scale) and the lower scale in order to center.

   b. Position the carriage with the center at the center point. This is the long arrow near 50 on the front scale. (This is called the center point.)

   c. Insert the paper (8 or 8½" wide), centering it in the carriage. You do this by placing it between the vertical marks on the clear view card holder.

   d. Place the grummet, opening up, over the ribbon guide, and type the line you want to center. (When the grummet is on, no typing will appear on the paper.)

   e. When you finish typing this first time, write down, or remember the number on the lower scale where you stopped.

   f. Remove grummet. Place it on the paper bail.

   g. Find the same number on the upper scale, position the carriage at this number.

   h. Type exactly as you did the first time. This line will be centered.

5. Typamatic keys

An Executive typewriter will have at least three Typamatic or repeat keys as follows:

3-unit space bar
carriage-return key
underline-dash key

All typewriters do not have the same repeat keys. When you begin typing on a new typewriter, practice on it and find out about the Typamatic keys and anything else that might be different. Get acquainted with your machine before beginning a new job.

ASSIGNMENT:

1. Type in caps and center:

   International Business Machines

2. Do the same as No. 1 with:

   Marie Katzenbach School for the Deaf

3. Use the expand key and type your own name, centered.
4. Use the expand key and type your parents' name and address.
5. Write the table of unit measurements.

VOCABULARY:

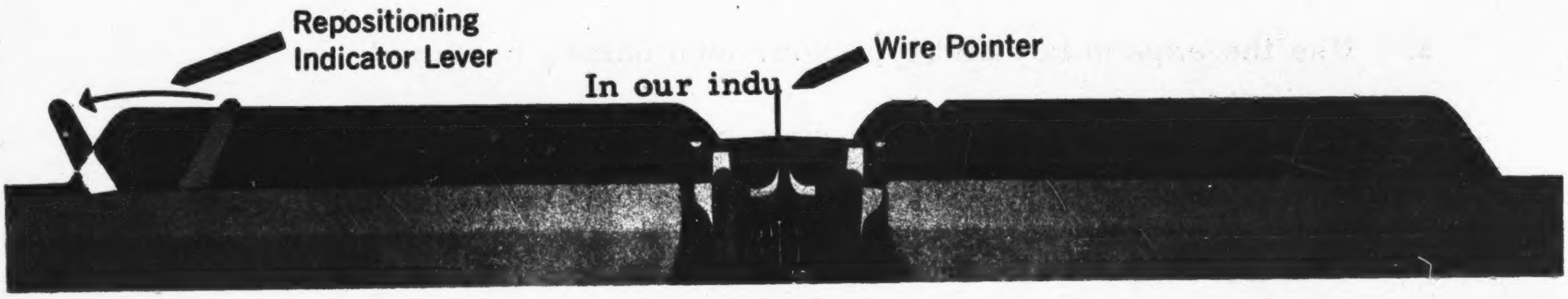
automatic	-	ô tō măt′ ĭk	-	self-acting, working by itself
caption	-	kăp′ shŭn	-	heading, name
expand	-	ĕks pănd′	-	grow bigger, spread out
grommet	-	grŏm′ ĕt	-	a small ring, an eyelet
position (v.)	-	pō zĭsh′ ŭn	-	to put something in the place where you want it

IBM Electric Executive Typewriter-Erasures

Lesson 7

OBJECTIVE: To learn to find the correct typing place after making an erasure.

INFORMATION:



1. Find the reposition indicator level on the illustration. Find the wire pointer on the illustration.

2. Suppose you started to type the word "industry" and you have typed "indue." The last character (letter) "e" is wrong, and you must erase it. Move the carriage to the right or left and erase.

3. Move the carriage back to the "u". Move the repositioning indicator lever to the left (as shown in the picture) and hold it there. This causes the wire pointer to come up to the line of typing.

4. Is the pointer at the right side of the last letter? In this case the last letter is a "u". The pointer should be at the right side of the "u". If it is not, the carriage must be moved until the pointer is in the proper place.

5. DO NOT MOVE THE CARRIAGE WITH THE POINTER UP. Release the lever before moving the carriage.

6. Move the carriage until the pointer lines up evenly with the right side of the "u", as shown in the illustration. Release the lever.

7. Type the correct character (letter), "s".

8. Continue to type "try", etc.

You have learned the table of unit measurements. You know that some letters are wider than others. Sometimes you cannot erase one letter and type in another, because the space where you have erased will not be wide enough, OR it might be too wide.

Examples:

1. You have typed "geeeral" when you wanted "general."
   Can you erase the middle "e" and type in an "n"? Yes. Why?

2. You have typed "menory" instead of "memory."
   Can you erase the "n" and type in an "m"?
   No. Why not? What would you do?

3. You have typed "gemeral" when you wanted "general":
   Can you erase the "m" and type in an "n"? No. Why not?
   What would you do?

ASSIGNMENT:

Practical work on using the repositioning pointer and correcting errors according to unit size.

Rewrite the table of unit measurements.

VOCABULARY:

character	kăr′ ăk tẽr	in writing or in printing - any letter, number, or sign, such as are on the typewriter keys
reposition	rē pō zĭsh′ ŭn	to put back to the first place or spot

UNIT II - TYPEWRITERS

IBM Electric Executive Typewriter-- Shadow Printing Lesson 8

OBJECTIVE: To learn how to do shadow printing on the Executive typewriter.

INFORMATION:

You will be able to do this unusual kind of typing, because the Executive typewriter has an unusual part on it. This key allows you to make any part of the typed sheet look as though the printing has a shadow.

To do this, we use the expand key. As you know, the expand key is in the "up" position when we do most of the typing. If, for any reason at all we want more room, horizontally between the letters, we push the expand key down.

With the key down, type the heading that is to get a "shadow."

INTERNATIONAL BUSINESS MACHINES

Return the carriage to the beginning position. Backspace once. Type exactly as you did before, typing the same words:

INTERNATIONAL BUSINESS MACHINES

The result will be shadow printing and will look like this below:

INTERNATIONAL BUSINESS MACHINES

ASSIGNMENT:

1. When might you want to use "shadow printing"?

2. The first step in shadow printing is:

3. The second step is:

4. The third step is:

Practical work on shadow printing.

VOCABULARY:

horizontal	hŏr ĭ zŏn´ tăl	the side-to-side direction
image	ĭm´ ĭj	a copy or likeness or picture of something
shadow	shă´ dō	a dark image of something formed when light falls on that thing

IBM Electric Executive Typewriter--Justifying Lesson 9

OBJECTIVE: To learn how to justify right-hand margins on the IBM Executive typewriter.

INFORMATION:

You can type a professional looking sheet of work. It can have a justified (straight) margin on the right-hand side, if done on an Executive typewriter. It can be made to look like the printing in a newspaper or a magazine, because this kind of typewriter has proportional spacing.

Here is an example of justified typing:

> BELL DUE: Up to this time
> you have typed the copy line
> for line and have not had to
> wait for the bell to ring to
> guide you to return the car-
> riage.

Below are the things that you must remember if you are to do a professional piece of work:

1. When you want a justified copy, you must always type the work two times.
2. The first time will be a rough draft and the right-hand margin will not be straight. You will always use the 2-unit space bar when typing the rough draft.
3. The second time, you will add or subtract units of space, as you need to, to make a straight margin. (This is sometimes called a flush margin.)
4. You will make the lines all the same length (flush) by using the 3-unit space bar to make the line longer, or by using the 2-unit space bar and the backspace key to make the line shorter. Remember that the backspace key is the only 1-unit key.

5. A. Rough draft

(1) Insert paper in typewriter.

(2) Set desired left margin.

(3) Decide where you want the right margin to be. Put that spot on the scale, above the V-notch. Draw a vertical line with a sharp pencil, by holding the pencil in the notch and turning the platen knob around.

(4) Type.

As you type each line, end the line as near the vertical line as possible. Some lines of typing will be too short; some will be too long. It would not be possible to get them all right on the rough draft.

(5) Remove typed sheet from the typewriter.

(6) Look carefully at the typing. Make a check mark (✓) for each unit where spaces are to be decreased. Make a line (/) for each unit where you must increase the spaces.

B. Final copy

(1) If a line needs additional units, add them by using the 3-unit space bar instead of the 2-unit space bar. Do this between the words.

If the line needs shortening, you may use 1 unit between the words instead of 2. Do this spacing with the 2-unit space bar and then backspace 1 unit. This makes a 1-unit space.

(2) It looks best to add spaces between high letters (h, l, k, b, t) and subtract spaces between low letters (a, s, e, n).

(3) Work SLOWLY. Take time to think.

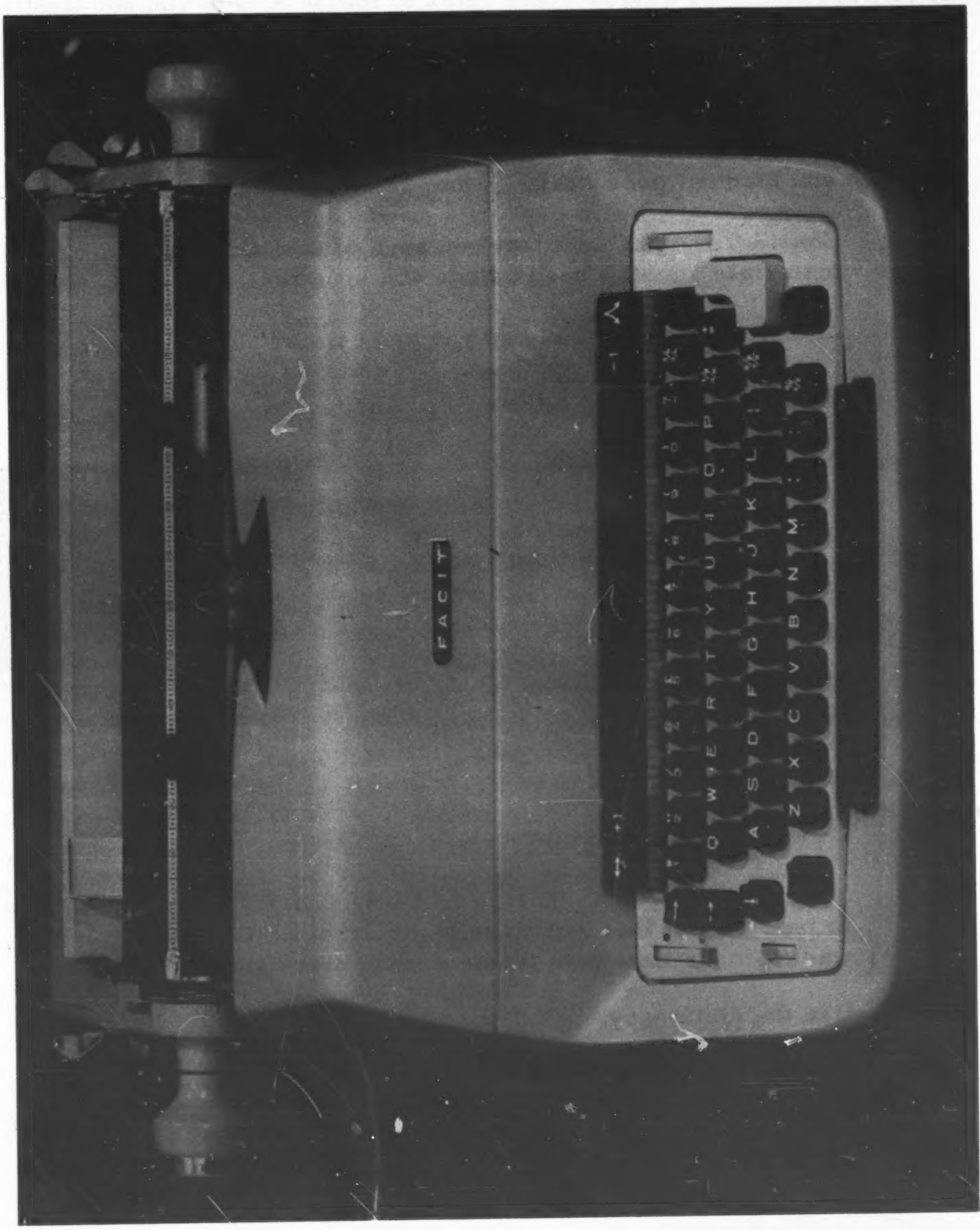
ASSIGNMENT:

1. What does a "justified" margin mean?
2. Why did we learn to make only the right-hand margin straight?
3. Why do you need to type a rough draft first, before making the final copy, when you want a justified right-hand margin?
4. What kinds of papers would need to have a flush margin on the right?
5. Would you justify the right-hand margin in an ordinary business letter?

VOCABULARY:

justify	-	jŭs′ tĭ fī	-	to type or print lines so they are exactly the same length
professional	-	prō fĕsh′ ŭn əl	-	so good that it looks as though it had been done by a real expert
desire	-	dē zīr′	-	to wish for, to want very much
additional	-	ȧ dĭsh′ ŭn əl	-	extra
final	-	fī′ nəl	-	the last; with no more after it
notch	-	nŏch	-	a V-shaped cut or gap
decrease	-	dē krēs′	-	to make less, fewer
increase	-	ĭn krēs′	-	to make larger or more

ELECTRIC TYPEWRITER



UNIT II - TYPEWRITERS

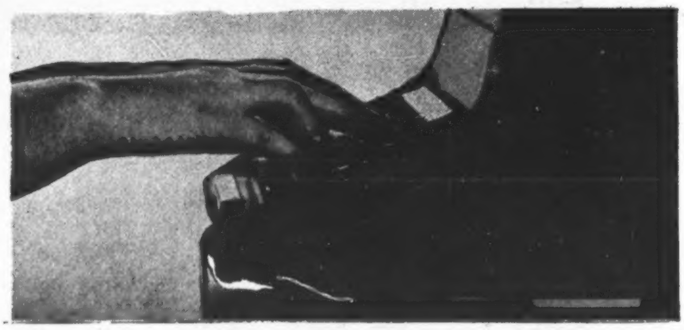
General Rules **Lesson 10**

OBJECTIVE: To review some rules to follow to help you get good typing results.

INFORMATION:

There are a few important things to remember about typing that will help you turn out good work.

1. Consider the problem that you have to do. Get all the materials you will need before you sit down.
2. Adjust chairs and desks so you are comfortable and have good posture at the machine. This means you must think particularly about the following:
    a. keep back straight
    b. keep elbows in
    c. keep feet on the floor
    d. keep fingers close to the home keys
    e. keep elbows slightly slanted down from the wrists



3. Return carriage quickly.
4. Use a smooth and even touch.
5. Type as fast as you can type ACCURATELY. You must not try to type so fast that you make many errors. Correcting errors wastes more time than typing a little more slowly.
6. Use the dictionary to find correct spellings.
7. Proofread your work. You must not ever give work to anyone when it is poorly done.
8. REMEMBER! When you type from a copy, your typing must be correctly done. If the copy is wrong, YOU MAKE IT RIGHT.

9. Remember that, by using carbon paper, you can duplicate your first copy.

10. Each day you must clean your typewriter and dust your desk. You must always leave your work area clean and neat.

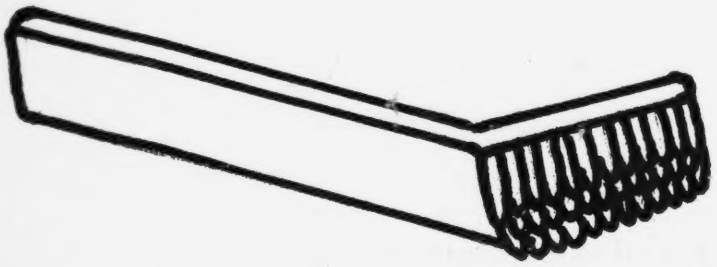
11. FORM THE HABIT OF TURNING OFF AN ELECTRIC TYPEWRITER whenever you stop typing, even if for a very short time.

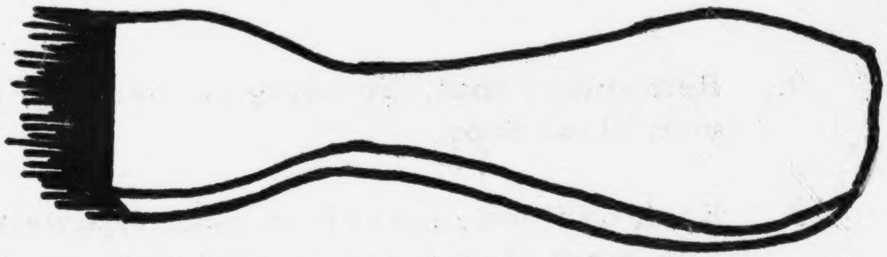
VOCABULARY:

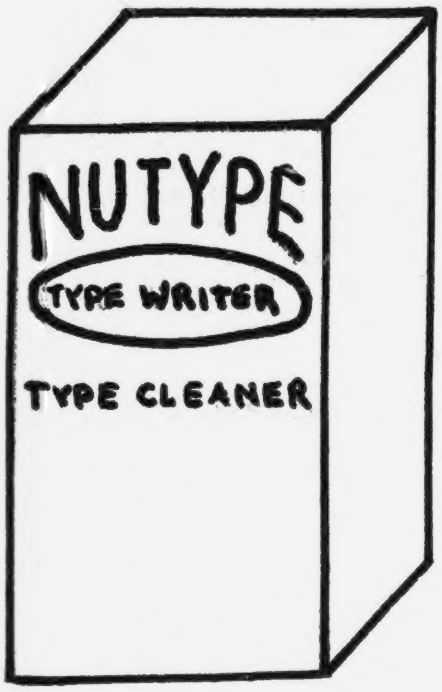
consider - kŏn sĭ′ dẽr - think carefully about something

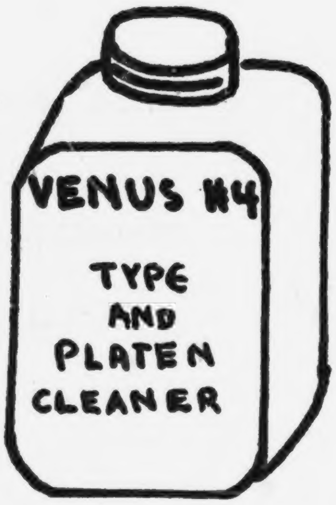
duplicate - dū′ plĭ kāt - to make an exact copy of something

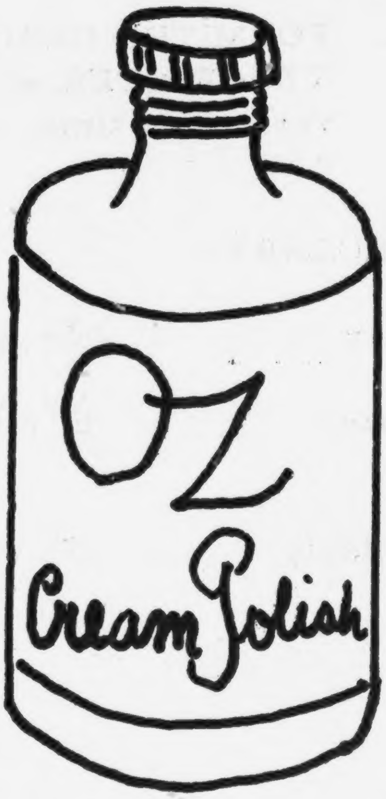
particularly - pẽr tĭk′ ū lẽr lĭ - especially, chiefly, most of all

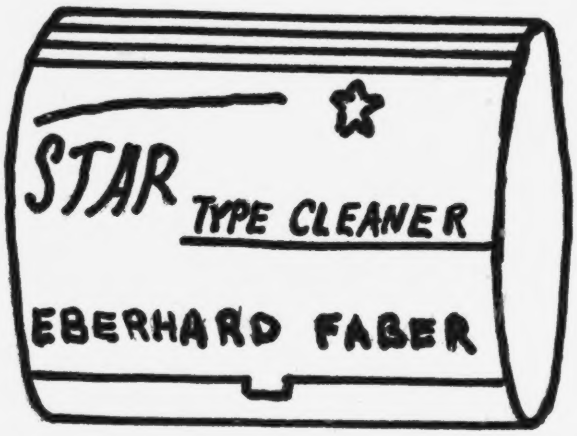


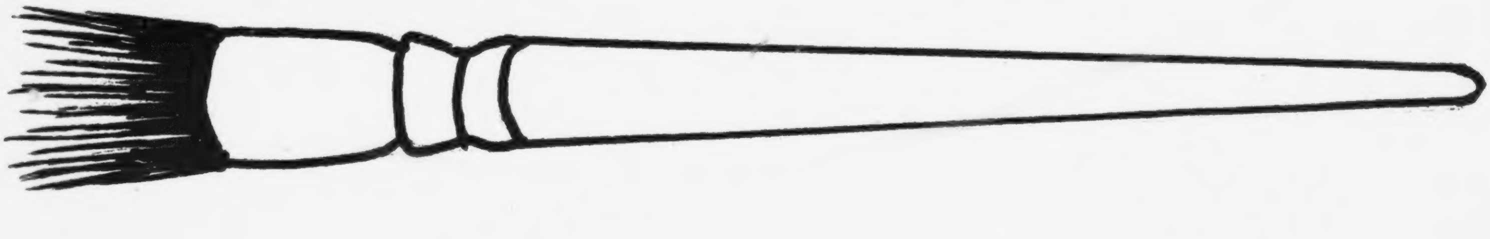



NUTYPE
TYPE WRITER
TYPE CLEANER


VENUS #4
TYPE
AND
PLATEN
CLEANER


OZ
Cream Polish


STAR
TYPE CLEANER
EBERHARD FABER



Care of Electric Typewriters Lesson 11

OBJECTIVE: To learn the proper care of electric typewriters.

INFORMATION:

Rules to follow for keeping a clean looking typewriter and for getting the best service from it.

1. Dust the outside of the typewriter every day.
2. Clean the type often. Use a liquid cleaner or a gum-like plastic cleaner.
3. When erasing, remember to move the carriage so that the eraser crumbs do not fall over the type bars.
4. Use an eraser suitable for carbon copies or for original copies.
5. Brush erasure crumbs away from the type basket.
6. Become familiar with both silk and carbon ribbons. Learn to change either with ease.
7. Keep the ribbon changed as necessary. Change the position of typing on the ribbon often, as this will prolong its life.

ASSIGNMENT: TRUE OR FALSE

1. When you have a position working in an office, someone else will do all of your proofreading for you. ____
2. It does no harm to let the eraser pieces fall right down among the type bars. ____
3. If you find a word spelled wrong in the paper you are copying from, you must make sure that you spell the word correctly. ____

4. If you know you will be using the same materials the next morning, it is all right for you to leave everything out on top of the desk overnight. ____

5. For good typing results, you must always think of speed first. ____

6. Carbon ribbons last longer than silk ribbons. ____

7. We use each place on the carbon ribbon only once. ____

VOCABULARY:

familiar	-	fȧ mĭl′ yẽr	-	knowing something well
prolong	-	prō lông′	-	to make longer

UNIT II - ACHIEVEMENT TEST

FILL IN THE CORRECT WORD

1. The electric typewriter has a carriage return ____________
2. We have ____________ chairs and typewriter desks in this room.
3. If you are typing from a copy that has a word misspelled, you must spell the word ____________.
4. The only typewriter that has proportional spacing is the ___________ typewriter.
5. When we center a heading on the IBM Executive, we use a ____________ to keep the keys from typing.
6. Our Executive typewriter has a __________ ribbon.
7. If you want to do shadow printing, you must use the ____________ key.
8. Three repeat keys that are usually found on electric machines are the __________, ____________, and ____________.
9. In proportional spacing, each letter takes its own number of ___________.
10. When we make the right-hand margin straight, up and down, we call it _________.

Choose from:

grommet
right
IBM
lever
key
adjustable
centerpoint
Executive
space bar
carbon
up
expand
justifying
underline
backspace
units
correctly
down
carriage return
fabric

TRUE OR FALSE

_____ 1. You must type as fast as you can and not worry about the number of errors you make.

_____ 2. You should use a very heavy touch when typing on a manual typewriter.

____ 3. Electric typewriters all have multiple copy controls.

____ 4. The multiple copy control allows the typist to insert as many sheets as she wishes.

____ 5. Posture means how you sit at the machine.

____ 6. There are two ways to center on the Executive typewriter.

____ 7. "Expand" means to make larger, or type the letters farther apart.

____ 8. On the Executive typewriter you can always erase one letter and have enough room to type any other letter in its place.

____ 9. There are two kinds of typewriter ribbons.

____ 10. It is very important to leave your machine and desk or table clean and dusted every day.

OFFICE PRACTICE Practice work on the Standard Electric Typewriter

1. Get acquainted with your machine.
   Read through pamphlet, "Key to Better Typing."

2. Typing for Accuracy
   Alphabet: Pages 24-26, once, 60-space line
   Page 22, Drill 3, once, 60-space line
   Paragraphs: Pages 42 and 43, each paragraph once, 70-space line

   Practice these drills until you can type them PERFECTLY; then you are ready for problems.

3. Problems
   Get sheets of plain white paper, letterheads, carbon paper, small envelopes, and large ones. Keep them all in a file folder, and begin your work.

   20th Century Typing - 8th edition
   Page 115, Problem 2. Follow the directions in the book. Make one carbon.
   Page 258, Problem 3. Follow the directions in the book. Make one carbon.

130 Basic Typing Jobs

Page 11, Job 25. Use modified block style, no paragraph indentions, mixed punctuation. Type this letter two times. The second time, use a DIFFERENT 2nd page HEADING. Make one carbon.

Pages 25-26, Job 54. Follow the instructions in the book. Make one carbon.

Page 37, Job 75. Follow directions in the book. Make one carbon.

Statistical Typing

Page 45, Problem 4. Follow the directions in the book. Make four carbons.

Notice for Bulletin Board

130 Basic Typing Jobs, Page 23.
Follow the directions in the book. Make nine carbons.

Manuscript

130 Basic Typing Jobs, Pages 51-58
VERY IMPORTANT: Read the directions on page 50 carefully. Make one carbon copy.

4. Test

This will be a different kind of test. Read directions carefully before you begin. Be sure you understand what you are to do. Tell me when you are ready to begin. See how much you can get finished in 30 minutes.

20th Century Typewriting, 8th edition. Pages 206 and 207. Problems 1, 2, and 3, under 140-C. Read all directions. Use letterhead paper. Make 2 carbon copies of each letter. Correct all errors. Do not begin over. Do not type envelopes.

OFFICE PRACTICE Practice work on the IBM Executive Typewriter.

Hand in only perfect copies of the following:

1. IBM: A Short Course in Electric Typing

   Page 9, Exercise 4, 3 times
   Exercise 5, 3 times

   Page 10, Paragraphs I and II until you can type them perfectly. No erasures!

   Page 12, Exercise 7. Read all directions and set left margin as directions say.

   Page 27, Exercise 21. Follow the directions for margin settings. This is practice in returning the carriage quickly.

2. 20th Century Typewriting, 8th edition
   Problems to center:
   Page 65 - 38-B
   Page 60 - 34-B
   Page 147 - Problem 3 in Shadow Printing
   Page 81 - Problems 1 and 2

3. 20th Century Typewriting, 8th edition
   Page 104 - 66-C (Problems in proper erasures)
   Page 158 - entire page

4. 20th Century Typewriting, 8th edition
   Problems in justifying the right-hand margin
   Page 104 - Problem I
   Page 88 - first page of The Old Man and the Sea
   Pages 93 and 94

UNIT III - MIMEOGRAPHS

General Information — Lesson 1

OBJECTIVE: To learn about the Rex mimeograph and what it does.

INFORMATION:

The mimeograph machine you will learn to operate is called the REX ROTARY. This means that a large company by the name "Rex" made the machine, and so gave it their name. "Rotary" means "turning around in a circle, or revolving." The mimeograph machine makes copies when the cylinder revolves, or turns in a circle.

There are other makes of these machines. There is the A. B. Dick mimeograph, the Gestetner, and others that you might find where you work.

The mimeograph is a kind of duplicator; sometimes it is called a stencil duplicator, because we must type a stencil to use on the mimeograph machine.

"Duplicate" means to make an exact copy of something. A duplicator can make a great many exact copies of a stencil.

A typewriter is also a kind of duplicator. Can you tell me how it can be? Think of what "duplicate" means. Use one sheet of carbon paper and put it between two typing sheets. Type your material one time; you have two copies of your typing. The second sheet is a duplicate of the first sheet.

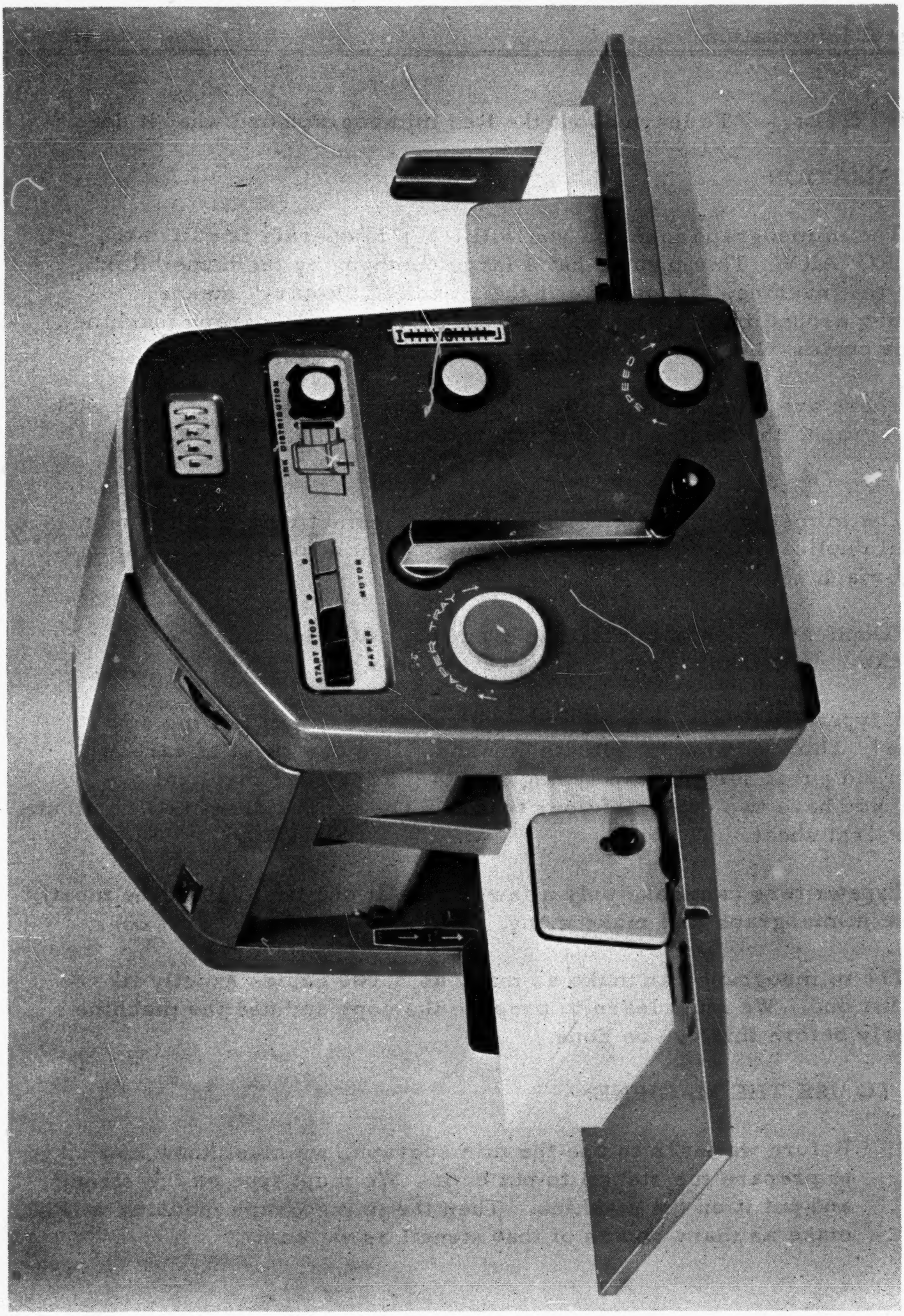
Typewriters can make only a few copies at one time (10 at the most), but the mimeograph will make many, many copies like the first one.

The mimeograph can make as many as 5,000 copies exactly like the first one. We must learn to prepare the copy and use the machine properly before this can be done.

HOW TO USE THE MACHINE:

1. Before we learn to use the mimeograph, we must know how to prepare the stencil to put on it. We must type on the stencil, and put it on the machine. Then the mimeograph machine will make as many copies of that stencil as we want.

REX ROTARY MIMEOGRAPH


INK DISTRIBUTION
START STOP
PAPER
MOTOR
SPEED
PAPER TRAY

2. The machine will print on any color of paper, but it is best to have a heavy paper. If paper is too thin, it will not work correctly. The paper must be a rough paper. Feel the difference between a rough and a smooth sheet of paper. What do you think any liquid would do on the smooth, shiny paper?

3. Our machine uses ink for the liquid. You know that if ink gets dry on a paper, it must have soaked in. So we must use paper that will absorb the ink. Then the ink will print on the paper and will not "run all over" and get smeary. Rough paper is porous. The ink will soak in. That is the way it should be.

Mimeographs can be either electric or manual machines. Most office machines these days are run by electricity.

We said before that our machine uses ink, but some duplicating machines use a clear liquid (no color).

ASSIGNMENT:

1. What does "duplicate" mean?

2. How can a typewriter be a duplicator?

3. What is the name of the typed paper that we must put on the mimeograph, so it can make the copies we want?

4. Why should we use rough paper on the mimeograph?

5. Do all kinds of duplicators use ink?

VOCABULARY:

absorb -	ăb sôrb′ -	to take in or suck up (liquids)
Gestetner -	gĕs tĕt′ nẽr -	name of a mimeograph machine
porous -	pô′ rŭs -	full of tiny, tiny holes where a liquid will soak in. A blotter, cloth, and a clay flower pot are all porous
smear -	smēr -	a bad-looking spot such as is made by rubbing wet ink or paint
stencil -	stĕn′ sĭl -	a waxy paper used for duplicating. When it is typed on, the ink comes through the typed characters

UNIT III - MIMEOGRAPHS

Preparation for Typing a Stencil — Lesson 2

OBJECTIVE: To learn about a stencil for the mimeograph and how to prepare one ready to put on the machine.

INFORMATION:

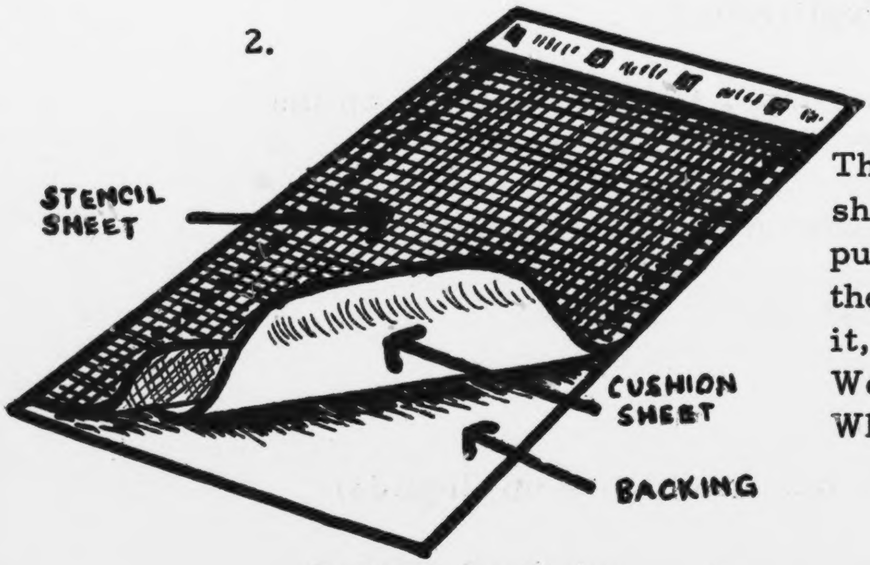
1. The paper we type on to put on the mimeograph is called a stencil. Stencils come in different colors. There are blue, green, orange, and red stencils.

   Different companies make stencils in different colors. Also, one company may use different colors for different grades (qualities) of stencils.

   Stencils come in different sizes. The 8½" by 14" size is the one most commonly used.

   There are special stencils for typing, another kind for handwriting, and still another kind for drawing. The regular typing kind can also be used for drawings.

2.



This is a stencil; this is the original sheet that we type on and will later put on the mimeograph. When we use the mimeograph with this stencil on it, we will get copies of the stencil. We can get as many copies as we need. What is the name of this 3-piece unit?

   a. The first sheet, on the top, has the typing on it. Later, it will be put on the mimeograph. This is a tissue paper with a wax coating on it.

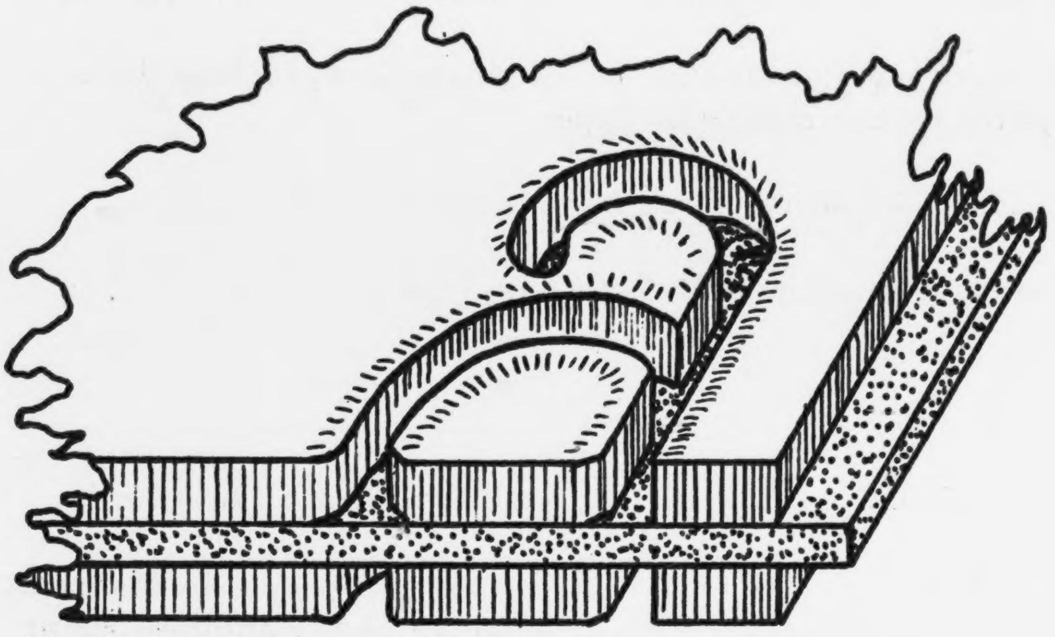
   b. The hard, white sheet on the back is the backing sheet. It is smooth and heavier than any other part of the stencil.

c. The cushion sheet is just what the name sounds like. It makes a cushion for the type when the key hits the coated side of the stencil. It helps to get a better typed stencil.

The cushion sheet comes in a separate box from the stencils. This is because you can use a cushion sheet more than one time. You will have to insert the cushion between the waxy sheet and the backing.

(1) If you have a cushion sheet with one smooth, shiny side, be sure the shiny side is up, next to the waxy sheet.

(2) If you have a tissue cushion sheet with one dark side, the dark side must be up, next to the waxy sheet.



CROSS-SECTION OF
TYPED STENCIL SHEET

3. Here you will see a large illustration of an "a". This shows you what the typing does to the waxy stencil sheet. When the type hits the stencil, it just moves the wax aside, and leaves the impression of the letter. Then when the stencil is on the machine, the ink will come through the places where the typing has pushed the wax away, and the ink will be in the form of the letter typed.

4. There is another kind of stencil. This one has four parts. It has the three that all regular stencils have, and also a sheet of film on the top of the waxy sheet. This film is there to keep the typist from striking the stencil too hard. With the film, all the typing looks evenly done (no light and dark typing) and no letters are hit too hard. If a typist ever strikes a letter too hard on a stencil, it will cut a hole in the stencil and then ink will later come through in a blot. Good stencils should never have blots on them.

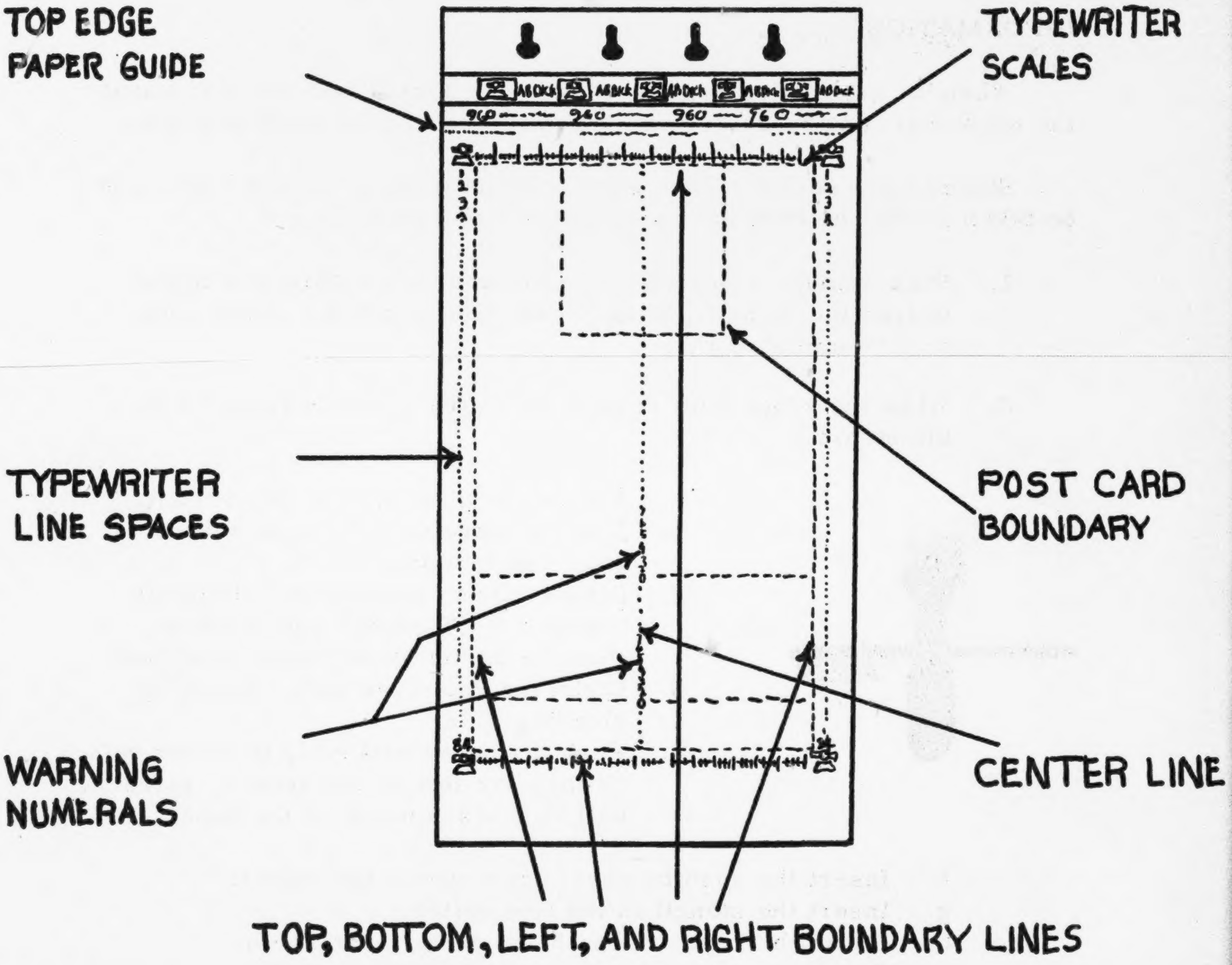
ASSIGNMENT:

1. What are four different things we can do on stencils?
2. Are all stencils the same size?
3. Can you explain what happens to the stencil when we type on it?
4. After we have put the stencil on the mimeograph, how does the ink print on the sheets of paper?
5. Can you name two kinds of cushion sheets?
6. How should the cushion sheets be inserted?

VOCABULARY:

cushion	-	kŏŏsh′ ŭn	-	a soft pillow to rest on
film	-	fĭlm	-	a sheet of very thin material used to cover another sheet
eliminate	-	ē lĭm′ ĭ nāt	-	to remove, get rid of, leave out, omit
tissue	-	tĭsh′ ū	-	very thin paper

STENCIL SHEET MARKINGS


TOP EDGE PAPER GUIDE
TYPEWRITER SCALES
960
TYPEWRITER LINE SPACES
POST CARD BOUNDARY
WARNING NUMERALS
CENTER LINE
84
TOP, BOTTOM, LEFT, AND RIGHT BOUNDARY LINES

UNIT III - MIMEOGRAPHS

Preparing a Stencil — Lesson 3

OBJECTIVE: To learn how to prepare a stencil ready to put on the mimeograph.

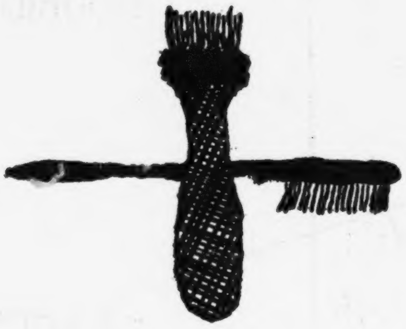
INFORMATION:

When we get ready to type a stencil, we must think and plan about the work that is to be done. Get organized before the work is begun.

Stencils are costly. They should not be wasted. Great care must be taken so that no time nor stencils are used unwisely.

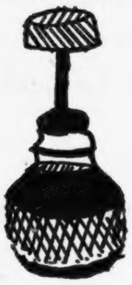
1. Plan to make a practice sheet of your job before you begin to type the stencil. This is sometimes called a rough copy, or a "dummy" copy.

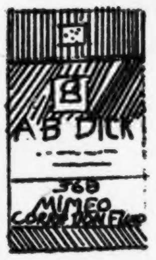
2. When the rough copy is done well, the typist is ready to type the stencil.



   a. Follow the plan on your rough copy.
   b. Use the margins you decided on for your rough copy.
   c. Set the ribbon control on "white" or "stencil." (Then the type strikes directly on the stencil with no ribbon.)
   d. Clean the type keys with a brush or cleaning fluid.
   e. Push the paper bail rolls to either side. (If they are left on the stencil, there will be a black mark on the paper.)
   f. Insert the cushion sheet correctly in the stencil.
   g. Insert the stencil in the typewriter.
   h. Strike the keys with a sharp, firm, even touch.
   i. Do not strike too hard on punctuation marks-- . , ", and also not too hard on "o" and "p".
   j. Strike a little harder on the m and the w, and also on the symbols $, #, %, and @.

3. How to correct errors on a stencil.



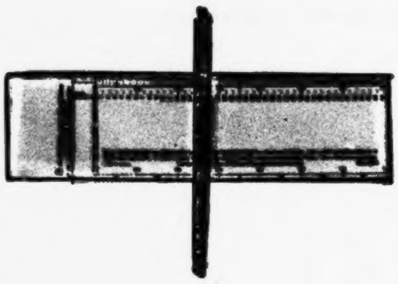


a. If you are using a cushion sheet that is not coated, you will need to burnish the error. This pushes the wax together again, so that the correction fluid does not go through the stencil.
b. If you are using a stencil with a film, you must turn down the film first, before applying the fluid.
c. Push a pencil in between the stencil and the cushion sheet before using the fluid. This keeps the two sheets from sticking together.
d. Correct each letter separately when using correction fluid. With the brush, paint a thin coat of fluid over the error. Use a vertical stroke of the brush over each letter. BE SURE THE ERROR IS COVERED WITH FLUID.

f. When finished, be sure the bottle of fluid is tightly closed. This keeps it from evaporating.
g. Let the fluid dry for about half a minute, or until it is dry.
h. Now type correctly over the error, but type more lightly than you did the first time.

4. PROOFREAD THE STENCIL BEFORE REMOVING IT FROM THE TYPEWRITER.

5.



If the stencil needs a signature or any other handwriting, insert a writing plate between the stencil sheet and the backing sheet. Use a stylus No. 469 or a ball point pen to write with. Hold the pen or stylus almost straight up and down.

If you are using a coated cushion sheet, remove it before any handwriting is done.

If you are using a tissue sheet, do not remove it before writing. Place the writing plate underneath the tissue sheet and write in the same manner.

6. Sometimes it will be necessary to save the stencil for use at another time. Get a newspaper ready and lay the stencil on it when it is removed from the mimeograph. Lay another newspaper over it. Rub the top paper to get the ink out of the stencil. Remove the top paper and put a clean one over the stencil. Rub again. Repeat this until the ink is out of the stencil.

   Store the dried stencil in a stencil folder. You may write on the folder the name of what is inside, or you might have run the folder through the mimeograph while the stencil was still on.

   Never leave the cylinder uncovered. Leave an old stencil on it, or use a cylinder cover. Covers can be found in the supply closet.

ASSIGNMENT:

1. Is it a good idea to type a "dummy" copy of any work before beginning to type on the stencil?

2. Why did you answer No. 1 the way you did?

3. How many copies can be run off from a well-typed stencil? If you wanted to get as many as possible, how many would it be?

4. When should a stencil be proofread?

5. Name three important things to do before typing a stencil.

VOCABULARY:

burnish	-	bûr' nĭsh	-	to rub, to polish
correction	-	kŏ rĕk' shŭn	-	something that is wrong made right
dummy	-	dŭm' ē	-	not the real thing, although it is made to look like the real thing
evaporate	-	ē văp' ō rāt	-	disappear; go into the air
insert	-	ĭn sûrt'	-	to put in, set in; put in between two objects
organize	-	ôr' găn īz	-	to arrange things, get them in order
rough	-	rŭf	-	not finished, needs to be made better, smoother
unwisely	-	ŭn wīz' lĭ	-	not wisely; not using your thinking or knowledge

UNIT III - MIMEOGRAPHS

Proofreading the Stencil — Lesson 4

OBJECTIVE: To learn to find all errors on a stencil before putting it on the mimeograph.

INFORMATION:

It is very important to find all errors before the stencil is put on the mimeograph. An error cannot be corrected once the stencil is on the machine. There is a great amount of time wasted if an error is not caught. There will be much paper wasted also, if the stencil is run off with an error in the work.

We cannot have time and paper wasted! Find all errors.

PROOFREAD BEFORE THE STENCIL IS REMOVED FROM THE TYPEWRITER.

Proofread means to read what you have typed, find the errors, and make corrections.

What is an error? Below is a list of the most common errors.

A word misspelled
An extra word added
A word left out
A "flying" capital
Striking over a mistake
A letter which is much lighter than the other letters
The wrong number of spaces after a punctuation mark
Typing off the side or bottom of the paper
Failing to follow directions for spacing
"Piling up" or crowding letters too close together
Left or right margins too uneven
Wrong number of spaces between words
Poorly done corrections

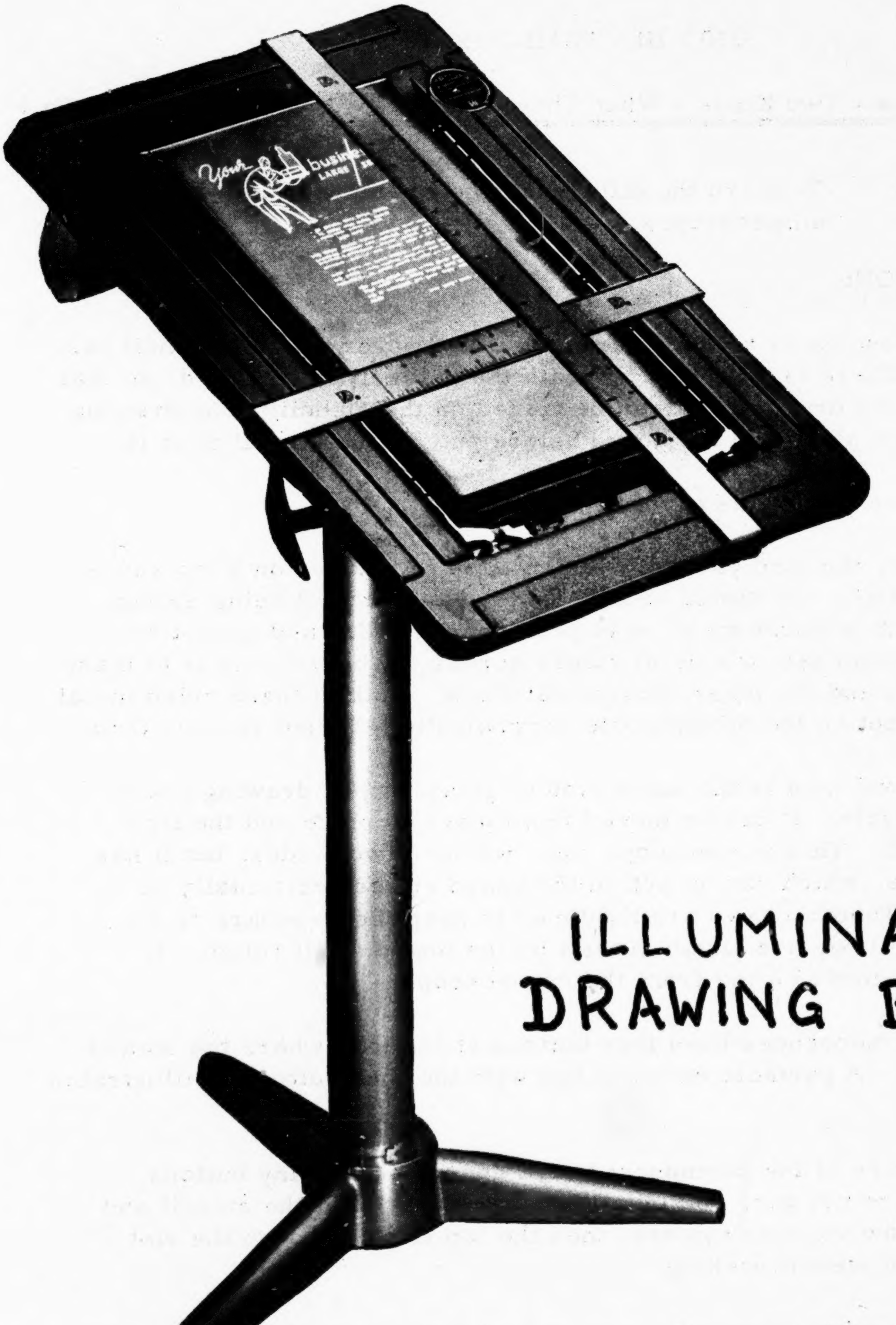
ASSIGNMENT:

Name ten mistakes you might find when proofreading.

VOCABULARY:

correction - kō rĕk′ shŭn - an error made right

punctuation - pŭngk′ tū ā′ shŭn - a mark that makes a division between parts of a sentence



ILLUMINATED
DRAWING BOARD

Mimeoscopes-- Two Kinds - What They Are

Lesson 5

OBJECTIVE: To learn the differences between the two kinds of mimeoscopes.

INFORMATION:

A mimeoscope is a lighted drawing board, over which a stencil can be placed. There is a light underneath the glass drawing board, so that one can see the drawing that can be traced on the stencil. The drawing will have been placed on the board before putting the stencil over it.

There are two styles of mimeoscopes:

One kind, the kind you see illustrated here, stands on a leg and is not moved easily. It should be left in one place without being moved. The light in it is fluorescent; it is permanently there and cannot be moved. You can see two metal rulers across the board; one is to make vertical lines and the other, horizontal lines. Both of these ruled metal guides are kept on the mimeoscope permanently. Do not remove them.

The second kind is the same kind of glass-topped drawing board, but it is portable. It can be moved from place to place and the light can be moved. This mimeoscope does not have two guides, but it has one T-square, which can be put on the board either horizontally or vertically. Thumbscrews are tightened to keep the T-square on the board. This T-square should be left on the board at all times. It should not be moved away from the mimeoscope.

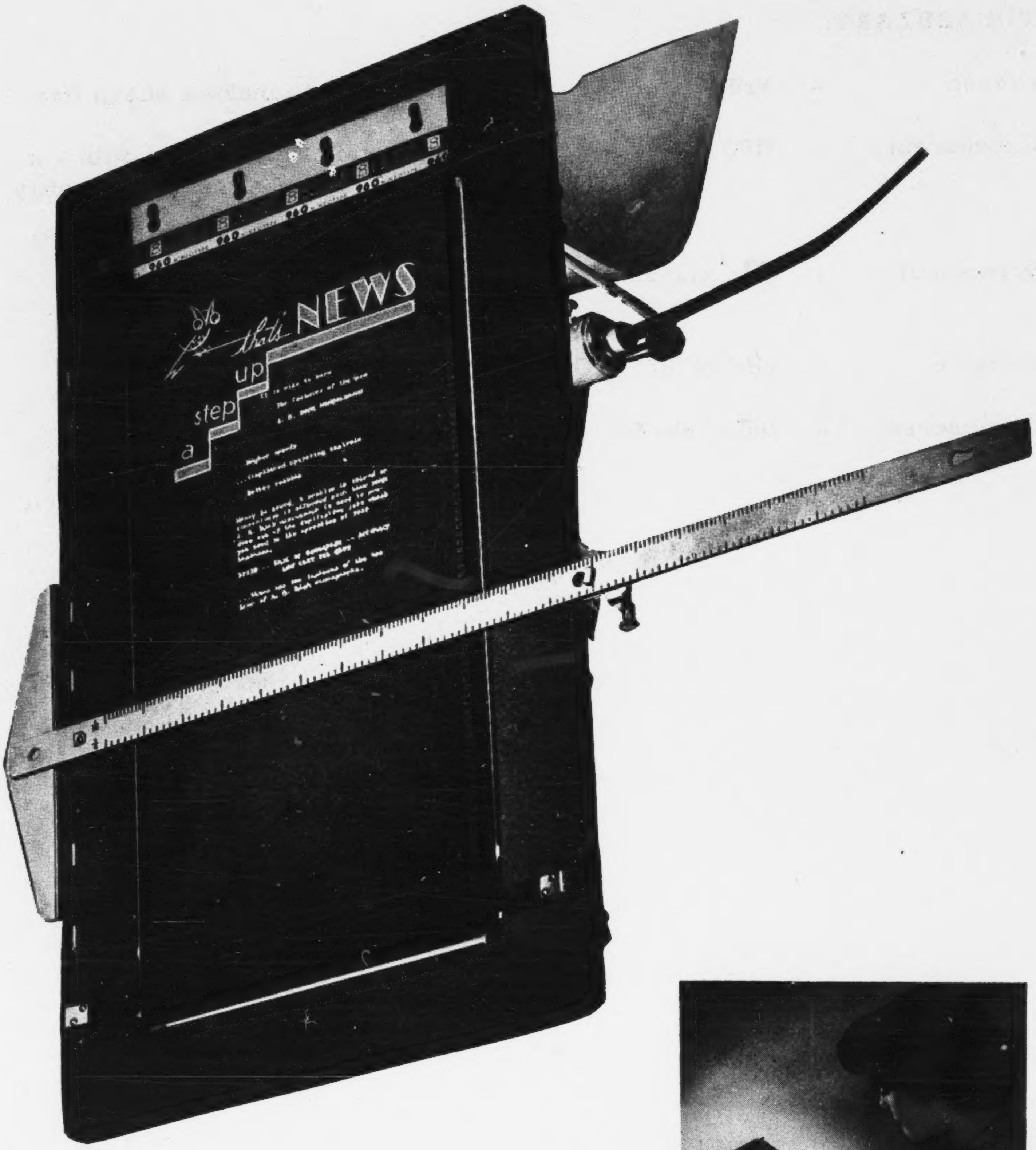
Some mimeoscopes have four buttons at the top, where the stencil is hooked on. A portable mimeoscope with the four buttons is illustrated in Lesson 6.

The picture of the permanent board does not show any buttons. When there are not any, you must turn down the top of the stencil and crease it below the four eyelets; then the top is put through the slot along with the stencil backing.

On every mimeoscope there must be a flexible writing plate. This takes the place of the cushion sheet you use when you are typing. It must always be between the stencil and the glass.

VOCABULARY:

crease	-	krēs	-	fold over to make a sharp line
fluorescent	-	flo͞o′ ō̍ rĕs′ ənt	-	A certain type of light bulb - a long, thin tube that glows softly when lit
permanent	-	pûr′ mȧ nĕnt	-	lasting for a very long time; not meant to be changed
portable	-	pôr′ tȧ bl	-	can be carried
thumbscrew	-	thŭm′ skro͞o′	-	a screw with a head that can easily be turned by the thumb and first finger, used to fasten two things together


a step up that's NEWS

PORTABLE MIMEOSCOPE

UNIT III - MIMEOGRAPHS

Mimeoscope - How To Use It — Lesson 6

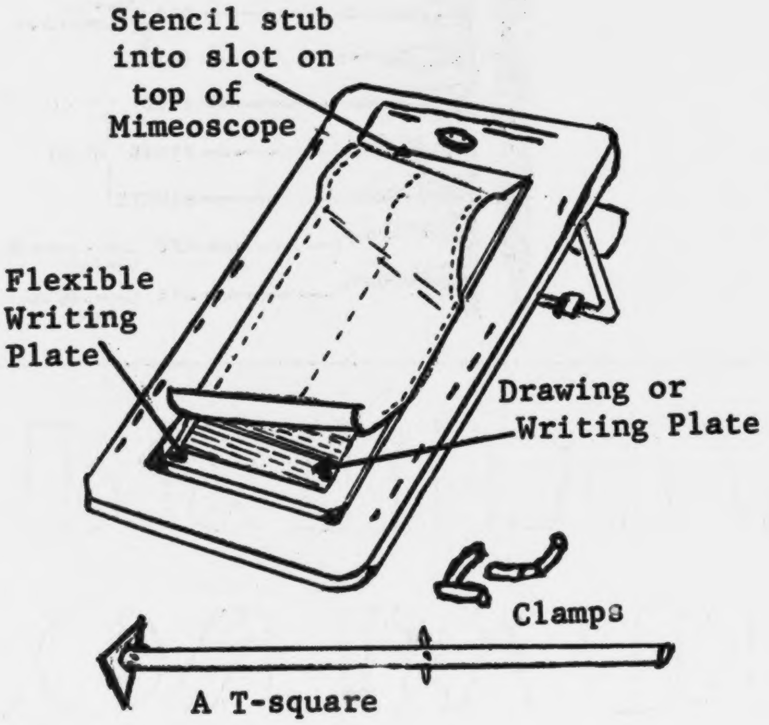
OBJECTIVE: To learn to use the mimeoscope.

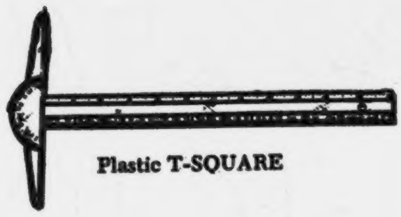
INFORMATION:

When the stencil is placed on the mimeoscope, drawings or pictures may be traced, and lettering may be done by the use of lettering guides and styluses.

Following are rules to follow in using the mimeoscope:

1. Connect the mimeoscope light and turn it on.
2. Be sure the flexible writing plate is on the glass surface of the mimeoscope.
3. Take the cushion sheet out from between the stencil sheet and the backing sheet. (The cushion sheet is used only when typing.)
4. Slip the backing sheet into the opening at the top of the drawing table so that the stencil sheet lies on the top of the writing plate.
5. Hook the top of the backing sheet over the four buttons at the top of the mimeoscope.
6. If you use a mimeoscope with no buttons, turn back the top of the stencil and crease it just below the dark line. Slip the top of the stencil through the opening with the backing sheet.
7. Gently stretch the stencil down over the drawing table and attach it with the clamps near the bottom of the stencil.
8. Place the T-square on the drawing board and fasten it so that it will not move. Use it for drawing or as a help when tracing letters. Be sure you leave room for the lower part of the guide which is solid.





Plastic T-SQUARE

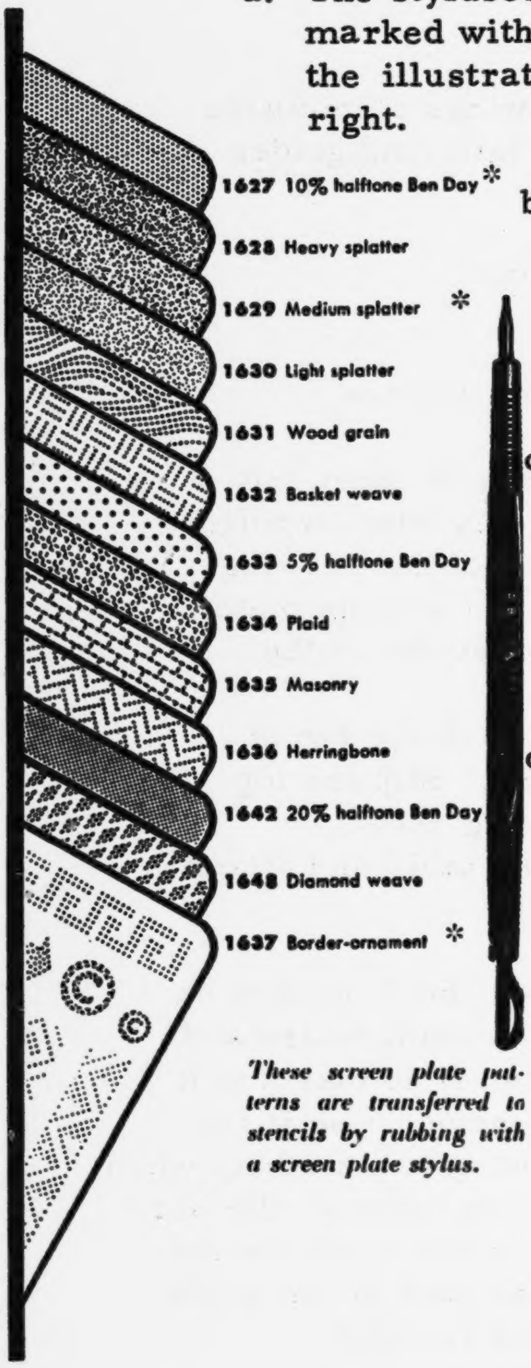
9. Get the tools that you will need to use on the mimeoscope.

   a. The styluses you will need are marked with an asterisk (*) on the illustration shown to the right.

   b. The screen plates you will need are marked with an asterisk on the illustration to the left.

   c. Below is an illustration of a lettering guide. You will need: #1508L - $\frac{3}{4}$'' script lettering; #537 - $\frac{1}{2}$'' printed lettering.

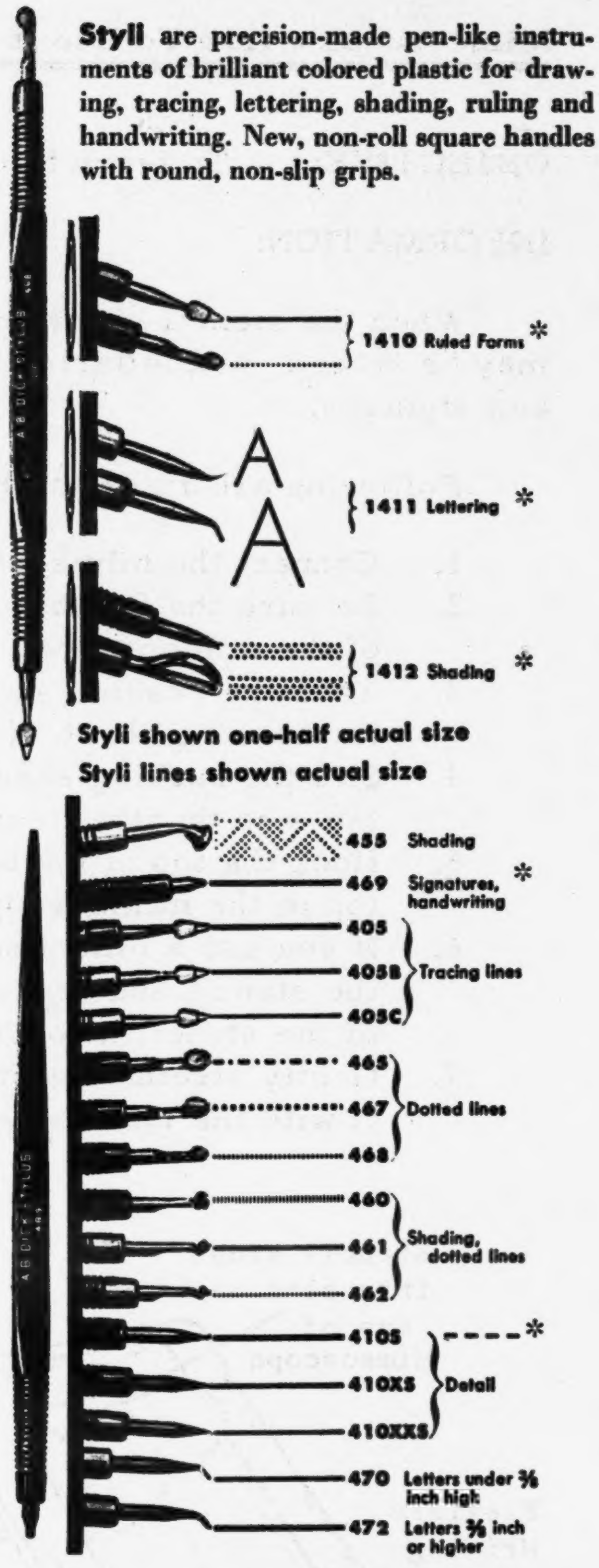
   d. Signature plate.


1627 10% halftone Ben Day *
1628 Heavy splatter
1629 Medium splatter *
1630 Light splatter
1631 Wood grain
1632 Basket weave
1633 5% halftone Ben Day
1634 Plaid
1635 Masonry
1636 Herringbone
1642 20% halftone Ben Day
1648 Diamond weave
1637 Border-ornament *

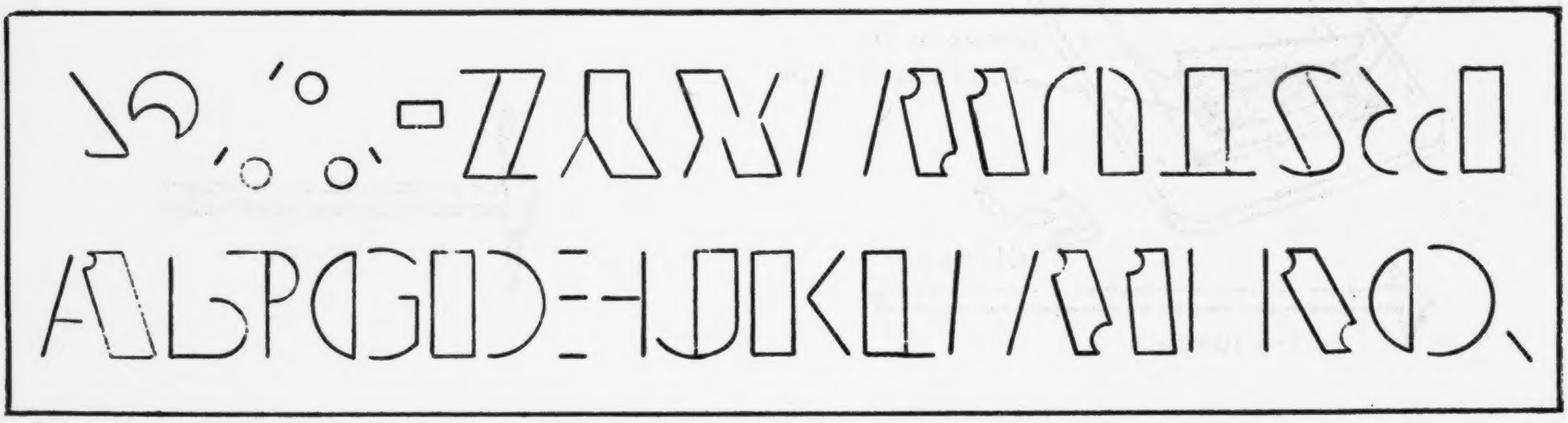
These screen plate patterns are transferred to stencils by rubbing with a screen plate stylus.

for LINES

Styli are precision-made pen-like instruments of brilliant colored plastic for drawing, tracing, lettering, shading, ruling and handwriting. New, non-roll square handles with round, non-slip grips.


1410 Ruled Forms *
1411 Lettering *
1412 Shading *
455 Shading
469 Signatures, handwriting *
405
405B
405C
Tracing lines
465
467
468
Dotted lines
460
461
462
Shading, dotted lines
410S *
410XS
410XXS
Detail
470 Letters under 3/8 inch high
472 Letters 3/8 inch or higher

Styli shown one-half actual size
Styli lines shown actual size



10. When you are finished, remove the stencil from the mimeoscope and turn off the light. Put away all of your tools in their right places.

IMPORTANT!

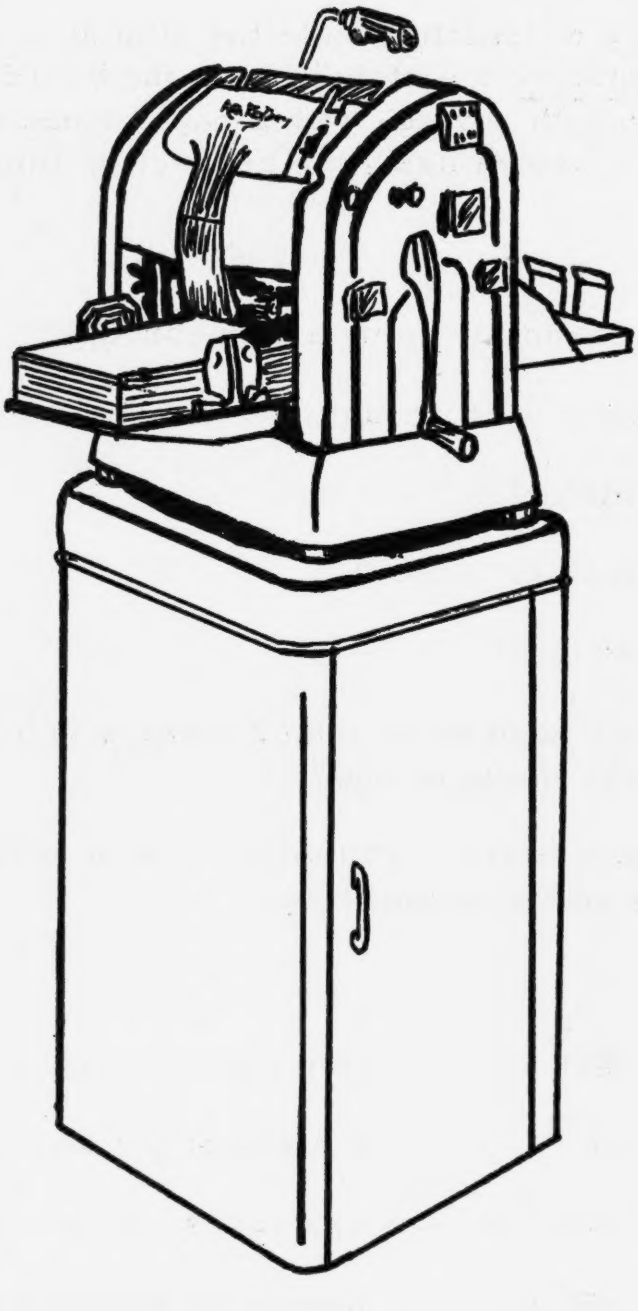
If you must make a correction while the stencil is on the mimeoscope,
you must remove the stencil from the board and lay it on
a smooth surface with a paper underneath it
before using the correction fluid.

ASSIGNMENT:

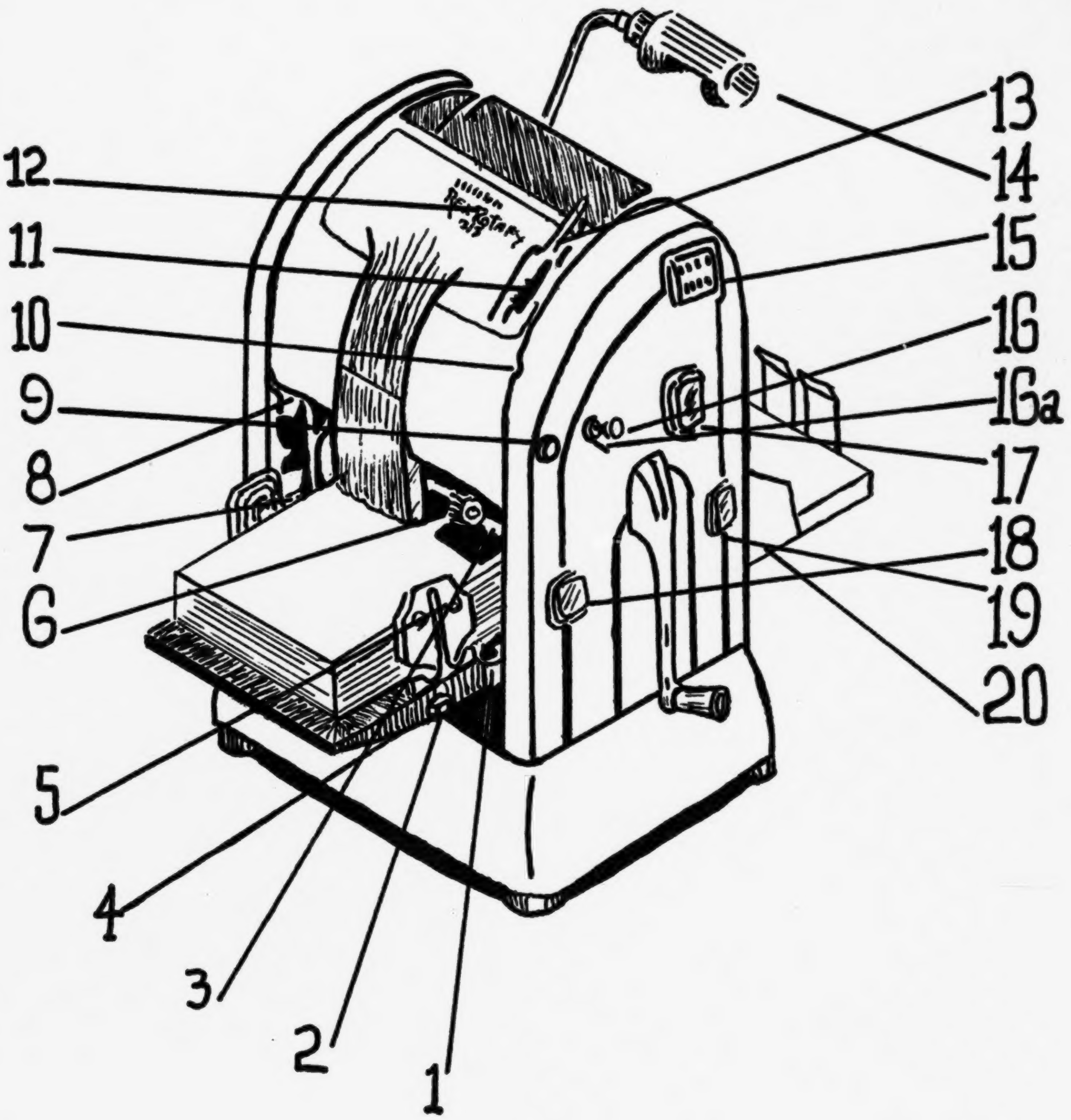
1. What is the reason for using a mimeoscope?
2. Why is a flexible writing plate needed on a mimeoscope?
3. What is it made of?
4. What does "flexible" mean?
5. What is a T-square?
6. Would you ever need more than 2 clamps to hold the stencil smoothly on the mimeoscope?
7. What is the procedure if you must make a correction while the stencil is on the mimeoscope?

VOCABULARY:

connect	ko᷵ nĕkt′	join together, put together
design	dē zīn′	a piece of art work; a drawing or pattern
precision	pre᷵ sĭzh′ ən	exactness, accuracy
procedure	prō sē′ d̮ur	how to do something: what comes first, then second, etc.
script	skrĭpt	a kind of handwriting
stylus	stī′ lŭs	the tool used to write or draw on a stencil. The plural form is either styluses or styli (sti li).
trace	trās	to make a duplicate of something by following its lines on a sheet placed over it
T-square	tē′-skwâr′	a tool shaped like the letter "T", used to make straight lines and exact corners



REX ROTARY MIMEOGRAPH


REX ROTARY

UNIT III - MIMEOGRAPH

Rex Rotary Mimeograph - Parts and Their Uses Lesson 7

OBJECTIVE: To learn the names of the parts of the mimeograph and what the parts are used for.

INFORMATION: Parts of the Rex Rotary mimeograph:

1. Thumbwheel for changing left and right margins.
2. Knob for moving the paper holder close to the stack of paper.
3. Sponge paper holders.
4. Paper feed tray.
5. Knobs for turning paper holders to hold small cards.
6. Paper feed rollers.
7. Lever to hold impression roller against the stencil on the cylinder.
8. Lever for lowering the paper feed tray.
9. Button to start paper feeding into machine.
10. Lever to stop the paper from feeding into machine.
11. Dial so that the machine will send the right amount of ink to the stencil automatically while the machine is running. There is also a pointer which is used to raise or lower the copy on the paper.
12. Cover for ink supply.
13. Ink supply lever.
14. Lamp and lamp switch.
15. Counter - automatically counts the number of copies made and stops the machine when the right number has been made.
16. Button that starts the motor.

16a. Button that stops the motor.

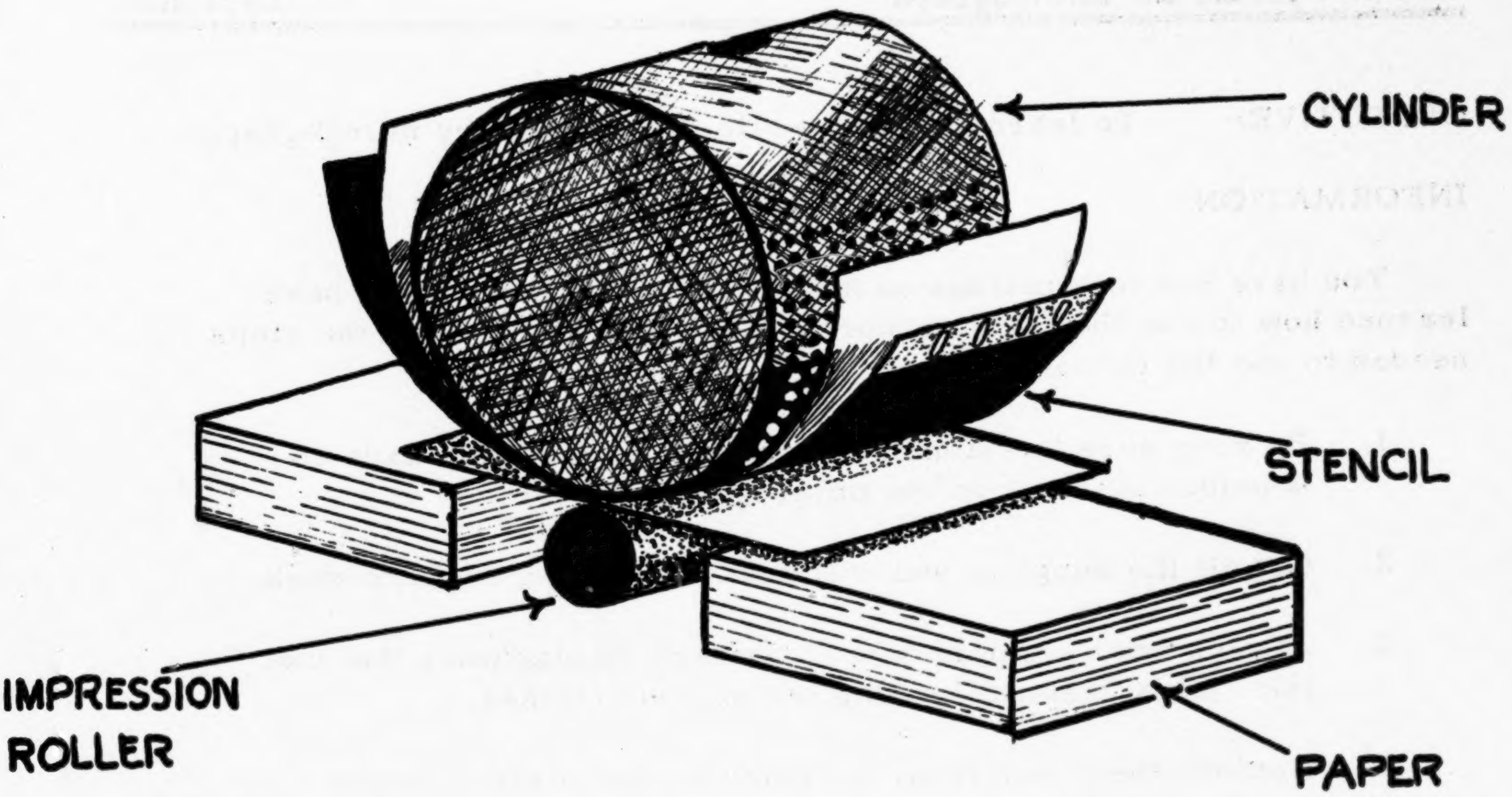
17. Dial for inking part or all of the stencil.
18. Knob to raise the paper tray.
19. Knob for changing the top margin.
20. Paper receiving tray.

ASSIGNMENT:

1. Where is the counter?
2. Which button starts the cylinder going around?
3. Which lever is best for stopping the machine?
4. Where is the lever for putting more ink in the cylinder?
5. If a typist typed a stencil with the right-hand margin much too wide, could she correct this when the stencil is on the mimeograph?

VOCABULARY:

dial	dī àl	a face like a clock has, that tells about something - it could be time, or miles per hour, or temperature. (On this machine, it is about ink.)
knob	nŏb	a lump; something small sticking out, as a door knob
stack	stăk	a pile, some thing piled up
thumbwheel	thŭm′ whēl′	a wheel that can be turned with the thumb and first finger



HOW THE MIMEOGRAPH WORKS

When we mimeograph we use four things: the mimeograph machine, a stencil, ink, and paper. The stencil may be typed, handwritten, or drawn. It is placed on the outside of the cylinder. The paper feeds in between the cylinder and the impression roller of the mimeograph.

As the paper goes under the cylinder, the impression roller rises and presses the paper against the stencil on the cylinder. At the same time, the ink is coming out through the holes in the cylinder, and through the openings in the stencil. It makes a copy on the paper of the work that has been put on the stencil.

How to Operate the Mimeograph

OBJECTIVE: To learn how to operate the Rex Rotary mimeograph.

INFORMATION:

You have had instructions on how to prepare a stencil and have learned how to use the mimeoscope. Today we will begin on the steps needed to use the mimeograph.

1. Be very sure the stencil has had all corrections made on it before it is put on the mimeograph.

2. Get all the supplies you will need before you begin to work.

3. Always wear a smock when you work on machines that use ink. This prevents getting ink on your clothes.

4. Remove the cover from the machine and place it neatly under the table.

5. If there is a stencil on the mimeograph, check with the teacher to be sure the stencil is not to be saved; if not, carefully lift it off the cylinder, wrap it in a newspaper which you have gotten ready, and dispose of it in the basket.

6. Remove the cushion from the new stencil. If it is still good, put it back in the box of stencils. Swing the lamp out of the way. Unfold the paper feed tray (4).

7. Hold the top of the stencil with your left hand and the bottom with your right hand. Attach the stub of the stencil to the stencil hooks on the cylinder with stencil sheet facing down and the backing sheet up.

8. Press the stencil lightly against the cylinder with the palm of your hand and turn the handle once in the same direction as the hands of a clock move. (We call this the clockwise direction.)

9. Lift the backing sheet to see if the stencil is sticking to the silk screen. If there are wrinkles, lift the stencil carefully and place it back again, with no wrinkles.

10. Press and hold down the impression roller lever (7). At the same time, turn the handle clockwise.

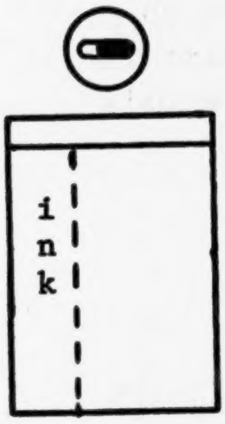
11. Lift the backing sheet and see if the impression from the stencil has come through on the backing. If it has not, pump the inking lever (13) once, while you turn the handle clockwise.

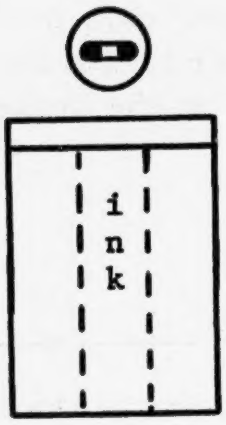
12. Repeat Steps 10 and 11 until the typing or drawing is clear on the backing sheet.

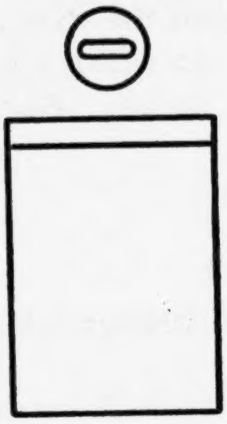
13. Carefully tear off the backing sheet.

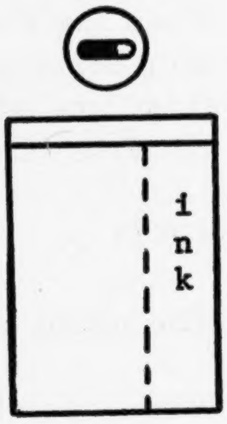
14. Check the number of full typewritten lines on your stencil. Set the automatic inking dial (12) on that number. Most of the time you will need a setting of about 25. It is best to set the dial at a number a little lower than the number of lines.

15. Set the inking dial (17). What does this mean? It means that you can ink one part of the stencil more than another part. Ink will go where the white part of the dial is.









PLACING THE PAPER

16. Take the paper that is to be used for practice paper. It might be colored paper that is not for "good" work, or it might be white paper that has printing on one side. When some of this is left in the basket, it can be used for practice the next time.

17. Place the old paper on the feed tray (4), sliding it forward as far as possible until it hits the front plate.

18. Raise the paper feed tray by turning the knob (18) until it stops.

19. Unfold the receiving tray (20). Swing the lamp into the position where you can use it best.

20. Press the feed button (9) and turn the handle clockwise to feed a piece of paper through. Press the lever (10) to stop the paper feeding.

21. Look at the sample copy.
    Are the top and bottom margins even?
    Are the left and right margins even?
    Do you have even inking on all parts of the paper?
    Is the paper free from ink on the back?
    Did the paper feed through straight?

22. How to change margins
    To make the top margin larger or smaller, place the sample so that the first line of typing is next to the pointer (11). Turn the knob (19) in the direction you want the pointer to go. Stop turning the knob when the pointer is where you want the first line of typing to be. Each line on the scale (11) equals one line of typing.

ASSIGNMENT:

1. The name of our mimeograph is ________________.

2. When you attach a stencil to the cylinder of the mimeograph, you must place the waxy part of the stencil ________________.

3. When we set the counter for the number of copies wanted, and start the machine, the machine will run until it has made as many copies as you want. What will it do then?

4. If the stencil is wrinkled on the cylinder, the wrinkles will make dark ______________ on the paper.

5. Is it important to get the stencil on the cylinder straight and smooth?

6. Can we put more ink in the cylinder after we have begun to run the mimeograph?

VOCABULARY:

attach	-	ȧ tăch′	-	to fasten to, stick to
clamp	-	clămp	-	a small piece of metal for holding things together
cylinder	-	sĭl′ ĭn dẽr	-	a round object with flat ends. It may be made of wood or metal or paper. A can of vegetables, a drum, and a mailing tube are all cylinders
dispose (of)	-	dĭs pōz′	-	to throw away, get rid of
palm	-	päm	-	the inside of the hand
tray	-	trā	-	a flat holder, usually with a rim around it, to hold things or to carry things on

Stencil Insets

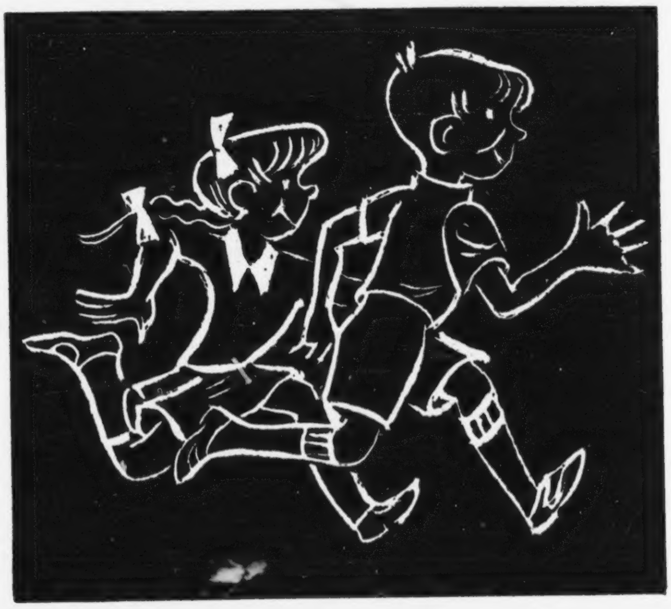
Lesson 9

OBJECTIVE: To learn how to use insets in stencils.

INFORMATION:

This is a very good way to get a picture or drawing on a stencil. You will not have to draw it nor trace it on a mimeoscope.

You might have a sheet of several pictures. Cut the inset you want out of the sheet.



1. Measure where the inset will be on the stencil. Leave about ½" of room on each side of the inset.
2. Make a tiny mark on the edge of the stencil where the typing can begin.
3. Remove the inset. Type the necessary work on the stencil, leaving room for the inset.
4. When all the rest of the stencil is finished, lay it flat on a hard-surfaced, smooth desk.
5. Remove the cushion sheet.
6. Put a sheet of smooth paper under the face of the stencil, where the inset will be put.
7. Cut an opening in the face of the stencil ½" smaller than the marks you made on the edges.
8. Lay the illustration under the top of the stencil to be sure the opening is the right size.
9. Remove inset.
10. Apply stencil cement very lightly around the edges of the opening.

11. Lay the inset on the cement. Be sure it is straight. Press down edges.

12. Lift up face of stencil so it doesn't stick to the paper underneath. Allow several minutes to dry.

13. When all is dry, stencil is ready to use.

ASSIGNMENT:

In teams of four girls each, the class can practice making stencils with insets.

One girl will measure the space needed for the inset and mark the outside of the stencil.

One girl will type around the place left for the inset.

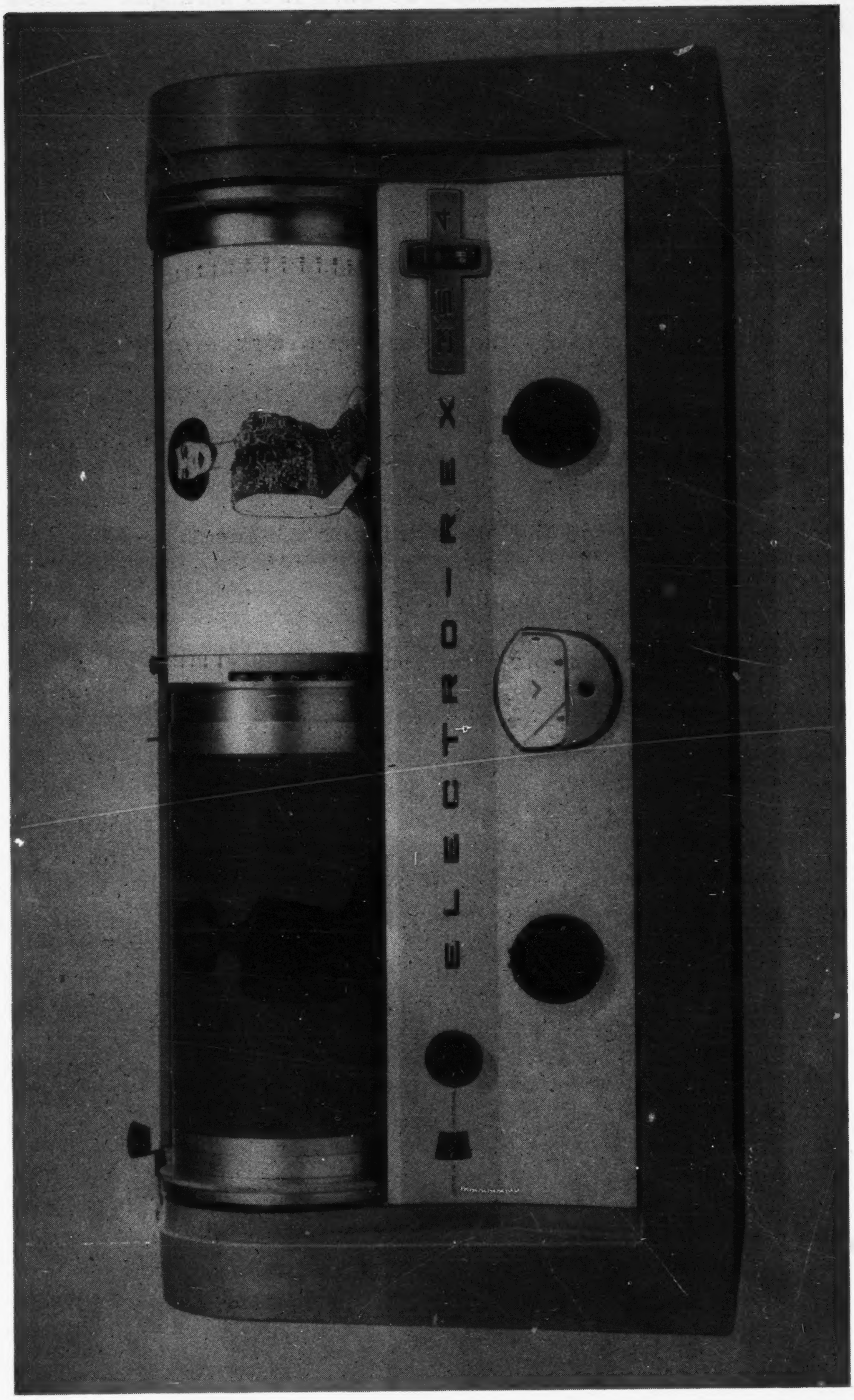
One girl will get the inset in place.

One girl will run off 10 copies (on practice paper).

VOCABULARY:

cement	-	sē mĕnt′	-	a thick liquid that makes things stick together; a kind of glue
inset	-	ĭn′ sĕt	-	something put in, or set in

ELECTRO-REX


ELECTRO-REX

UNIT III - MIMEOGRAPHS

Rex Rotary Electro-Rex - How It Is Used **Lesson 10**

OBJECTIVE: To become acquainted with a process of making stencils called the Rex Rotary Electronic Service.

INFORMATION:

This is a process that is quite new. We will look at the picture of a machine that makes a stencil in an entirely new way.

This is a process that will save time and there will be no errors because the stencil will get its picture electronically from the copy we place on the machine. The typing of stencils is entirely eliminated.

What is an electronic stencil? It is a plastic stencil prepared especially for duplicating the original copy by an electronic imaging unit. The imaging unit will copy exactly what it sees. The original copy must be sharp and clear. It must be flexible so it can be attached to the electronic cylinder, which is round, and it must be clean and smooth.

This electronic stencil production would not be done in an ordinary office or school. An outside company would make the stencil for the customer. Then it would be sent back to the customer to be run off on his own mimeograph.

Any kind of form, letterhead, bulletin, catalogue, page, or any kind of printed or written matter can be copied this way on to a stencil.

VOCABULARY:

acquaint	ȧ kwānt′	tell someone about something. "To be acquainted with" means to have a little knowledge about something, or to know a person a little
electronic	ĕ lĕk trŏn′ ĭk	having to do with electrons (very, very tiny charges of electricity)
imaging	ĭm′ ĭj ng	making a picture of something; copying, like a photograph
process	prŏ′ sĕs	a way of doing things, a set of actions in a particular order

CARE OF THE MIMEOGRAPH

1. Be sure mimeograph is level.

2. Keep machine out of direct sunlight and away from heat.

3. Keep feed rolls clean. Wash with lukewarm water and soap. Do not put rolls in the water, just use a damp cloth.

4. Keep impression roller clean. Wipe with cloth wrung out of soap and water. Make sure the roller is dry before putting it back in the machine.

5. Leave the mimeograph with the ink-pad side of the cylinder up.

6. Always keep the ink pad moist by keeping it covered.

7. Always cover the machine to protect it from dust when not in use.

PROBLEMS
that might come up about the
MIMEOGRAPH
and some answers

1. Uneven or very light print:
   Needs more ink.
   Poorly typed stencil.

2. Paper feed not working:
   Counter might read 9999; turn counter to 0000.
   Not enough paper on tray.
   Paper holders not tight enough OR too tight.

3. Paper tray will not release (fall down):
   While holding the release lever down, turn handle manually until tray releases.

4. Many sheets going through at one time:
   Paper holders are too loose (paper must not move from side to side).
   Be sure paper is fanned before putting on paper tray.
   Sheets must all be the same width.

5. Paper going only part way through, causing a "jam" under the cylinder:
   Paper holder too tight.
   A piece of paper stuck under the cylinder.

6. Paper creased and wrinkled:
   Paper holders too tight.
   Paper may not be evenly pushed in on feed tray.
   Fan the paper and be sure the ends are even.

7. Paper sticking to stencil:
   Too much ink.
   Printing too high on the sheet.
   Could be static electricity.

8. "Offset" or "setoff" ink on the back of sheet from the sheet before it:
   The receiving guides pointing too low.
   Receiving tray pulled out too far.
   Wrong kind of paper. Be sure it is rough, porous paper.
   Mimeograph running too fast.

OFFICE PRACTICE Practice Work on Rex Rotary Mimeograph Machine

Use the book Fundamentals of Mimeographing. When there is something you do not understand, please ASK.
REMEMBER: Proofread carefully before mimeographing.

Getting Ready

Study page 2, the picture on page 3, and page 5 carefully.

Problem 1--How to type a stencil

Lesson 1 in the book. Read pages 7, 8, 9, 10, and 11 and do what each step tells you, so that your stencil will look like the one on page 7.

Show the teacher your stencil when it is finished. Go to the mimeograph machine. Study the pages in your notebook called "How to Operate the Mimeograph Machine." Use your notebook to help you find the parts on the machine.

Make 10 copies of your stencil. Use practice mimeograph paper. Do not save the stencil.

Problem 2--Letter

Type a stencil like the model on page 13. Use the current date and sign your name at the end of the letter.

Show the teacher your stencil when it is finished. Make 10 copies of your stencil. Use practice mimeograph paper. Do not save the stencil.

Problem 3--How to do lettering on a stencil

Lesson 5 in the book. Study pictures on pages 36 and 37. Study pages 40, 42, 43 and do what each step tells you, so that your stencil will look like the one on page 41.

Show the teacher your stencil when it is finished. Make 10 copies. Use practice mimeograph paper. Do not save the stencil.

Problem 4-- How to do drawing and shading on a stencil

Lesson 6 in the book. Study pages 34 and 44. Study the pictures on pages 37-38. Study page 39. Study pages 46 and 47 and do what each step tells you, so that your stencil will look like the one on page 45.

Show the teacher your stencil when it is finished. Make 10 copies. Use practice mimeograph paper. Do not save the stencil.

Problem 5--A business form

Lesson 7 in the book. Study page 48. Study pages 50-51. First, type your stencil. Then draw ALL the lines on the mimeoscope. Follow each step, so that your stencil will look like the one on page 49.

Show the teacher your stencil when it is finished. Make 10 copies. Use practice mimeograph paper. Do not save the stencil.

Problem 6--A school newspaper notice

Lesson 8 in the book. It will be done in black only.

Show the teacher your stencil when it is finished. Make 10 copies. Do not save the stencil.

Problem 7--How to mimeograph a four-page folder

Lesson 10 in the book. Study page 62. Look at pages 63-64 carefully. You are going to make a folder like this. The teacher will help you.

Make 10 copies. Use mimeograph practice paper. Do not save the stencil.

Problem 8--How to justify right margins

Lesson 14 in the book. Study pages 86, 88, and 89 very carefully. Follow each step, so that your stencil will look like the one on page 87.

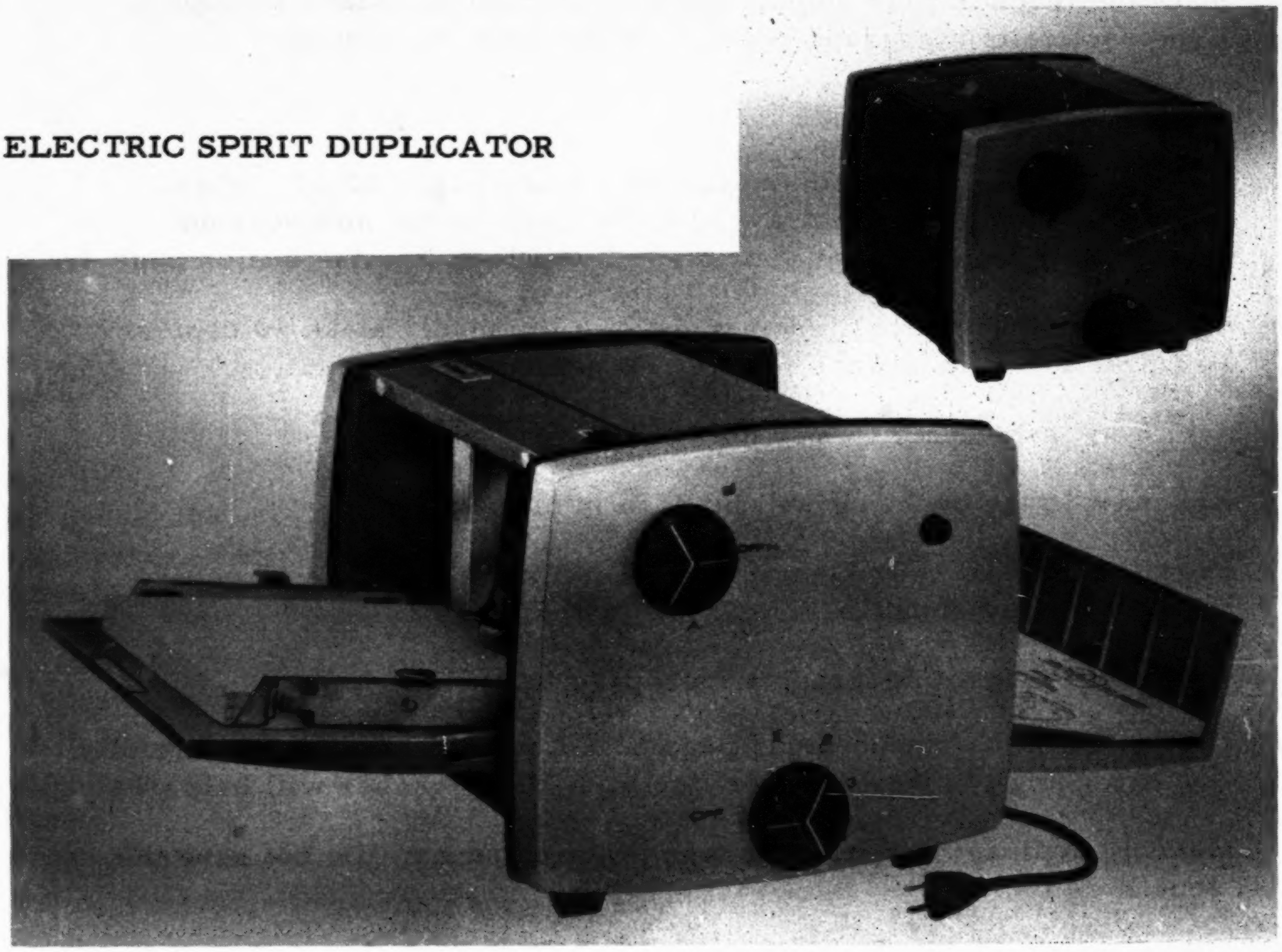
Show the teacher your stencil when it is finished. Make 10 copies. Use practice mimeograph paper. Do not save the stencil.

Test

a. Type a stencil of Problem 107-c in 20th Century Typewriting, 8th Edition. Follow directions for Problems 1, 2, and 3.

b. Page 216. Type in manuscript form, making all necessary changes. Make 10 copies. Use white mimeograph paper. Save the stencil. Place the stencil in a file folder and turn it in with the completed copies.

ELECTRIC SPIRIT DUPLICATOR



UNIT IV - FLUID DUPLICATORS

What the Fluid Duplicator Is — Lesson 1

OBJECTIVE: To learn what kind of machine the fluid duplicator is, and when to use it.

INFORMATION:

1. The name of this machine tells us that it is a duplicator. What does "duplicate" mean?

2. In the name also, is the word "fluid." What does "fluid" mean?

3. Now we know that it is a ____________ machine; that it does not use ink for the printing, but it does use some other fluid.

4. It is a machine that anyone can get ready for and use quickly. So we can say that if we want a small number of notices, or tests, or a ruled form for our own school, we would use this duplicator for the job.

5. These machines can be either manual or electric. On the manual machine, one must turn the cylinder by the handle.

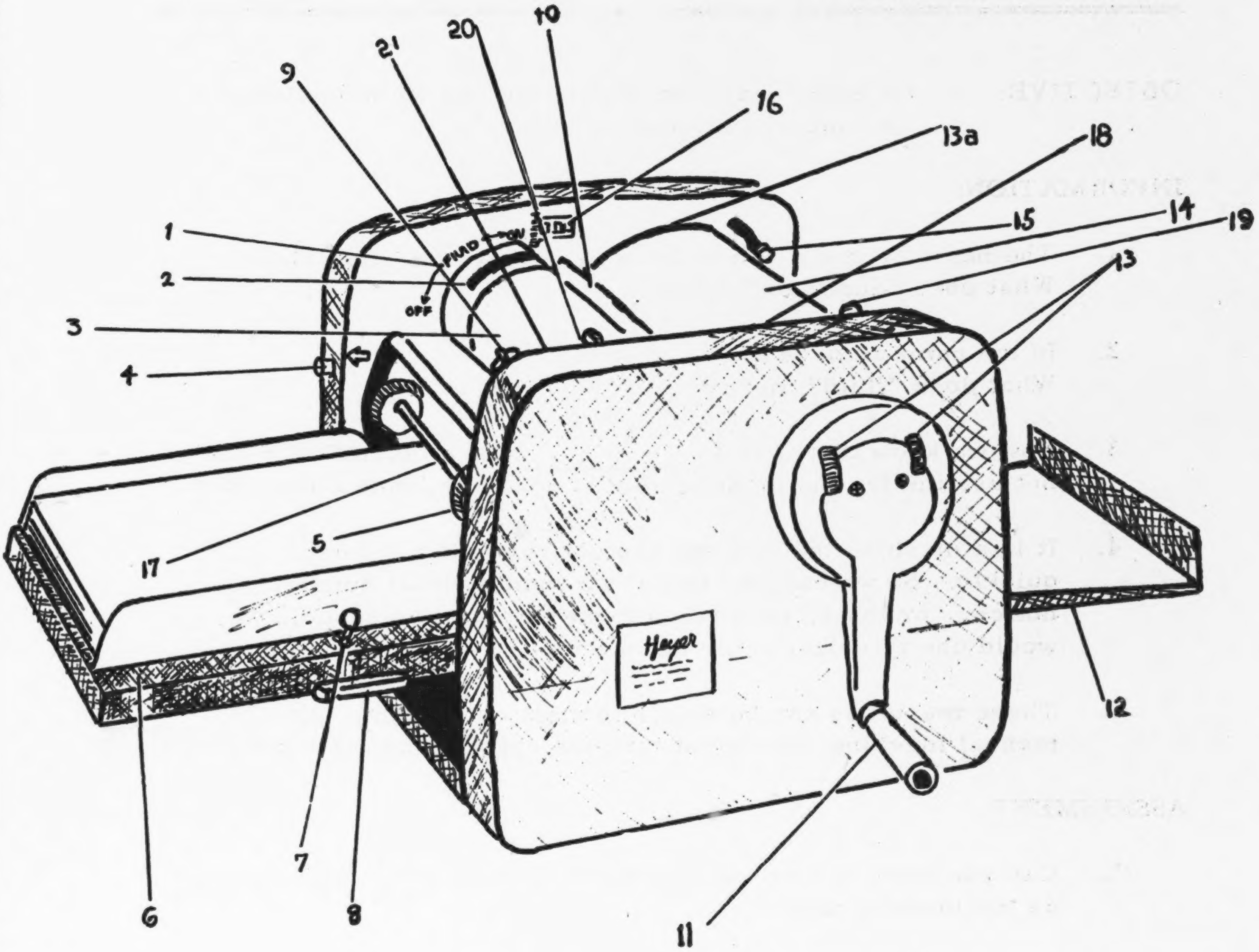
ASSIGNMENT:

1. Can you think of any ways in which this machine is the same as the mimeograph?

2. How is it different from the mimeograph?

VOCABULARY:

None.


10
20
21
9
16
13a
18
1
2
3
4
15
14
19
13
FLUID
ON
OFF
Heyer
17
5
12
7
6
8
11

FLUID DUPLICATOR Heyer, Inc.

UNIT IV - FLUID DUPLICATORS

Names and Uses of Parts of Machine — Lesson 2

OBJECTIVE: To learn the names of the parts of the Heyer duplicator, and how to use them.

INFORMATION:

Look at the illustration on the opposite page. See that the parts are numbered. We will talk about each one of the parts.

FIRST, we can see that the name of this machine is the HEYER Duplicator.

1. Shows you the direction in which to turn the tank to "ON" or "OFF".
2. Lets you see how much fluid is in the tank.
3. The tank that holds the fluid.
4. Feed button -- when you push it, the paper feed rolls drop down on the paper to push it through.
5. Paper feed rolls.
6. Paper feed tray.
7. Knobs which let you move the paper holders. There is one on each side.
8. Lever which raises or lowers the paper fingers.
9. Feed tension control -- the dial lets you set the machine to fit the kind of paper you are using (heavy paper, medium paper, or thin paper).
10. Clamp which holds the master copy.
11. Handle for turning the cylinder.
12. Paper receiving tray.
13. Thumbwheels for changing the top margin.

13a. Pointer shows the number of typing lines the print may be lowered or raised. Each line equals one typing line.

14. Cylinder.
15. Pressure control -- controls how hard the roller will press against the master, and the amount of dye the paper will take off the master.
16. Counts the number of copies you make.
17. Paper fingers help to guide the paper as it is fed to the cylinder.
18. Lever for opening and closing the master clamp.
19. Fluid control -- controls the amount of fluid going to the wick.
20. Cap for fluid tank.
21. Lever for turning fluid tank.

ASSIGNMENT:

1. Can the top and bottom margins be made larger or smaller, after the master is on the duplicator?
2. How can you change those margins?
3. What is the name of the part you use to change the top margin?
4. What can you do if the right and left margins are wrong? Can you change them?
5. Does this fluid duplicator use ink to print with?

VOCABULARY:

fluid	flōō′ ĭd	liquid, usually thin, like water
pointer	poin′ tẽr	a long thin piece of wood, or metal, or anything, used to point with
Heyer	Hī′ ẽr	name of a fluid duplicator

The following words you have had before. Say each word and show where it is on the machine:

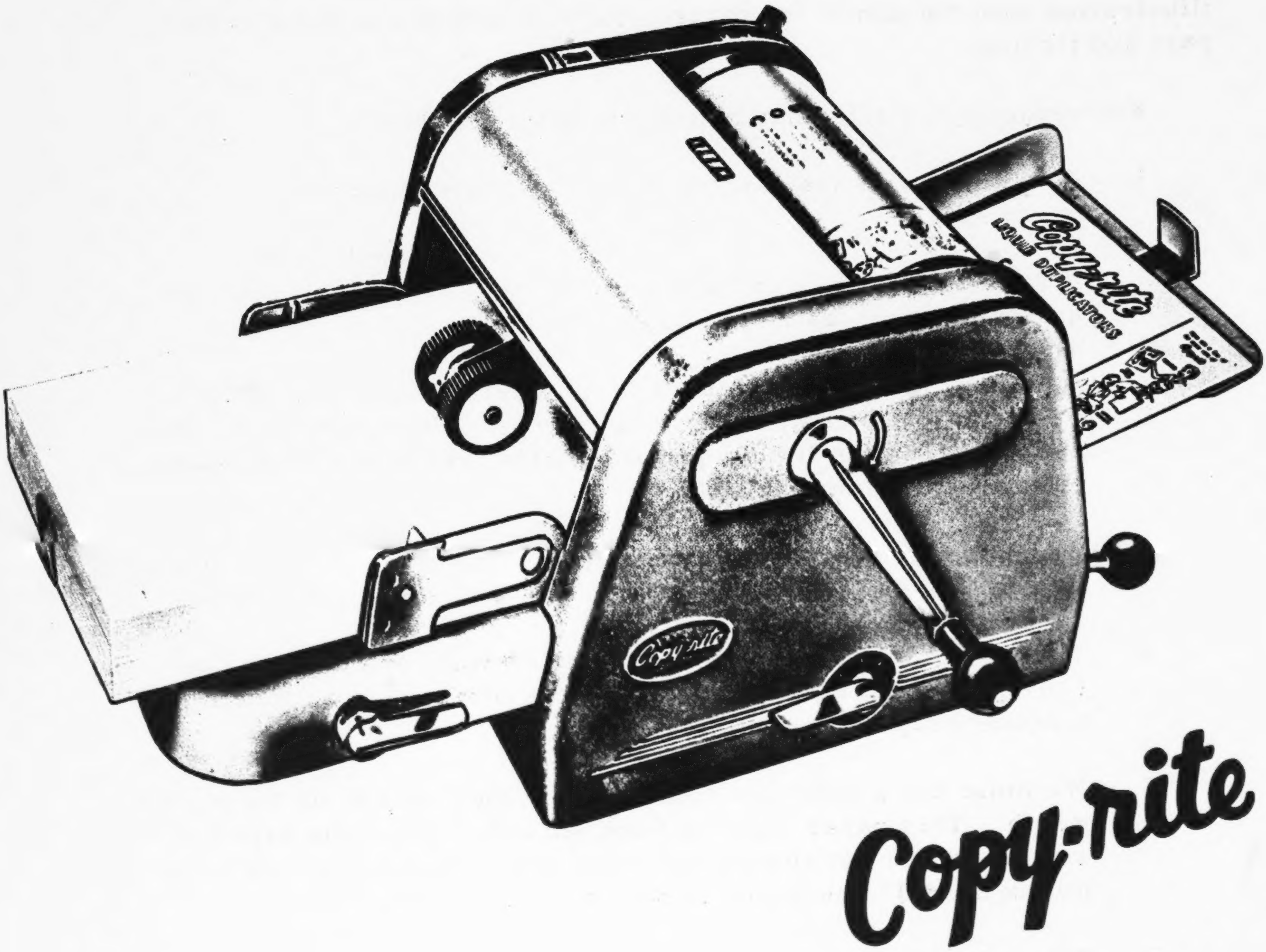
cylinder

margin

clamp

thumbwheel

MANUAL FLUID DUPLICATOR


Copy-rite
LIQUID DUPLICATORS
Copy-rite
Copy-rite

More Facts About the Machine

Lesson 3

OBJECTIVE: To learn more facts about the fluid duplicator and how it works.

INFORMATION:

Review of Lesson 2. Let us go back to that lesson and look at the illustration with the numbered parts. We will review the name of each part and its use.

Following is new information regarding the machine:

1. Sometimes this machine is called:
   fluid duplicator
   spirit duplicator
   liquid duplicator

   It can be called any of these names, or it can be called by the company name, as Heyer duplicator.

2. It is used when you are in a hurry to get a small number of copies at a low cost. When only a few copies are needed, each copy made on the fluid duplicator costs less than a copy made on the stencil mimeograph.

3. It is best used for things like bulletins, notices, announcements, or small tests. (Papers that are not very, very important.)

4. We can get between 200 and 300 copies from one master copy. (This is not nearly as many as can be made from a stencil on a mimeograph.)

5. We must use a different kind of paper than we use on the mimeograph. This paper must be very smooth. When the paper is smooth it will not absorb too much dye. (Remember there is no ink used.) The paper is not absorbent nor porous.

6. The color of the printing depends upon the color of the carbon (backing) sheet used to make the master sheet. Most of the time the printing is purple (or blue). Copies can be made with red, black, or green carbon.

7. Heyer makes a duplicating machine. Ditto, Inc. makes a machine very much like Heyer's, and the A. B. Dick Company makes one which it calls the Azograph.

8. How the fluid duplicator works:

   a. The master sheet with the typing is attached to the cylinder, negative side up.
   b. The paper is fed into the machine and is moistened by a piece of felt that is wet with the fluid.
   c. Then the paper is pressed against the master sheet, and the fluid which is on the paper dissolves a little bit of the dye from the master sheet. This dye that is taken off forms an impression on the paper.
      The result is a positive copy made from the dissolved dye.

ASSIGNMENT:

1. What kind of paper should be used on any fluid duplicator?

2. What is the name of the duplicator you will use?

3. Is the liquid in the duplicator, ink, or is it some other kind of fluid?

4. How many copies can be made on the duplicator from one master?

5. What does "negative" mean?

6. Why is it cheaper to use the fluid duplicator than the mimeograph for just a few copies of something?

VOCABULARY:

dissolve	dĭ zŏlv′	to soak into a liquid, to disappear into a liquid
master	măs′ tẽr	original paper that is typed for duplication. (For a mimeograph, the master is a stencil.)
moisten	mois′ n	to make slightly wet, damp
negative	nĕg′ à tĭv	no, the opposite of yes. A negative is the opposite of the picture you want. (In photography a negative is light where you want it dark, and dark where you want it light.) It is used to make a positive print.
positive	pŏz′ ĭ tĭv	in duplicating, the opposite of negative: just as you want it - black printing on white paper; in a picture, the bright parts are light and the shadows, dark.
press	prĕs	push against, hold tightly between two objects
spirit	spĭ′ rĭt	as used here, means a particular type of liquid, containing alcohol

UNIT IV - FLUID DUPLICATORS

Preparation of a Master — Lesson 4

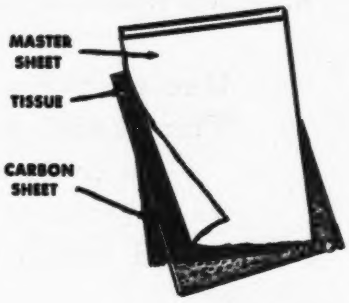
OBJECTIVE: To learn how to prepare a master copy ready to use on the duplicator.

INFORMATION:

Before the duplicator can be used, there must be a master sheet ready to put on it.

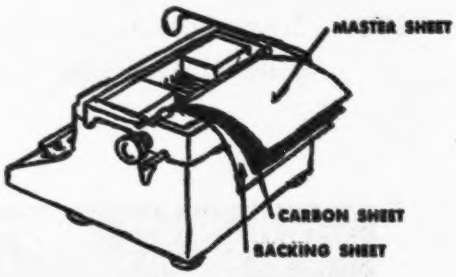
Keep in mind that we can type, or write, or draw on a master.

This is known as a master unit.
You will see that it is perforated at the top.
There are 3 separate pieces of paper in this unit.
FIRST is the white, shiny sheet called the master sheet. Type on it.
SECOND is a very thin sheet of paper, called a tissue sheet. It is there only to keep the carbon off the white master sheet.
THIRD is the carbon sheet. When you type, some of the carbon from it will be transferred to the master sheet.



PREPARING THE MASTER

1. Make sure the typewriter is clean. Type on a sheet of paper after cleaning to be sure no type was overlooked.
2. Get out one master unit.
3. Remove the tissue sheet from between the master and the carbon sheet. Keep the tissue sheet.
4. Place a sheet of thick paper behind the master unit.(This makes 3 sheets in all.)
5. Place the master unit in the typewriter so that
    a. the perforated end will be at the top
    b. your typing will be on the master sheet
    c. the backing sheet will be against the typewriter platen.



6. Type with a firm, brisk touch.

7. If necessary to make a correction, roll the master up until opened as far down as the error appears. Then do one of the following:
   a. Use a sharp knife to clean the carbon deposit off the back of the master sheet.
   b. Cover the error with correction tape.

   After the correction has been made, insert a small piece of carbon sheet, with the carbon side facing you, under the master sheet at the place where the correction was made. Roll the master down to the correct position and type correctly.

   Remove the small piece of carbon sheet and continue to type.

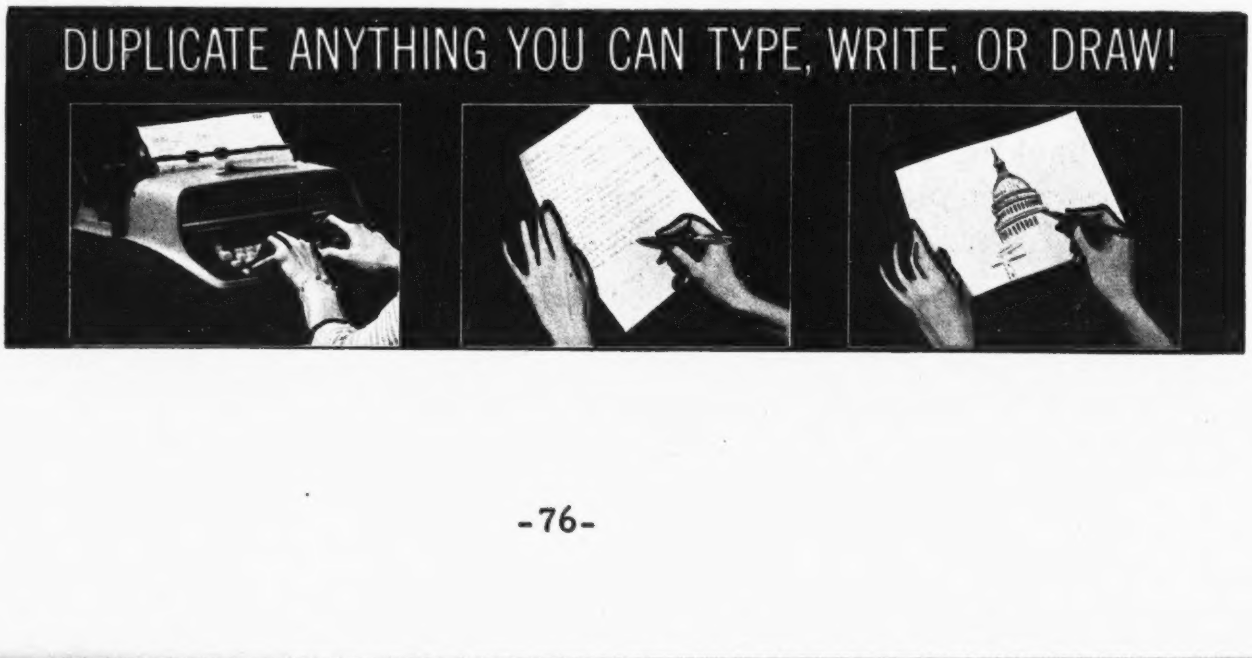
8. To make a drawing or to write on a master, do the following:

   Use a stylus, ball point pen, or hard lead pencil (No. H3).
   The pencil and pen are preferred, because then you will be
      able to see what you have done.
      Be sure the pencil has hard lead.
   Use a lettering guide and stylus for lettering.

9. If you want more than one color on a master, get it by using a new carbon sheet of the desired color, with the carbon side towards you, under the master sheet. Do the part of the stencil that you want in that color; then remove the carbon.

   If you want to shade an area or drawing, use a shading plate and a stylus. Darkness or lightness depends on how hard you rub with the stylus.

10. Remember all the rules that you have learned for good typing. Use them and they will result in good masters.


DUPLICATE ANYTHING YOU CAN TYPE, WRITE, OR DRAW!

ASSIGNMENT:

Each student will type a master and add a drawing or handwriting.

VOCABULARY:

brisk - brĭsk - full of life, rapid

deposit (n.) - dē̇ pŏz′ ĭt - an amount of something laid down or put on something else

method - mĕth′ ŭd - a way of doing something, usually an orderly way

perforate - pûr′ fô rāt - to make rows of small holes

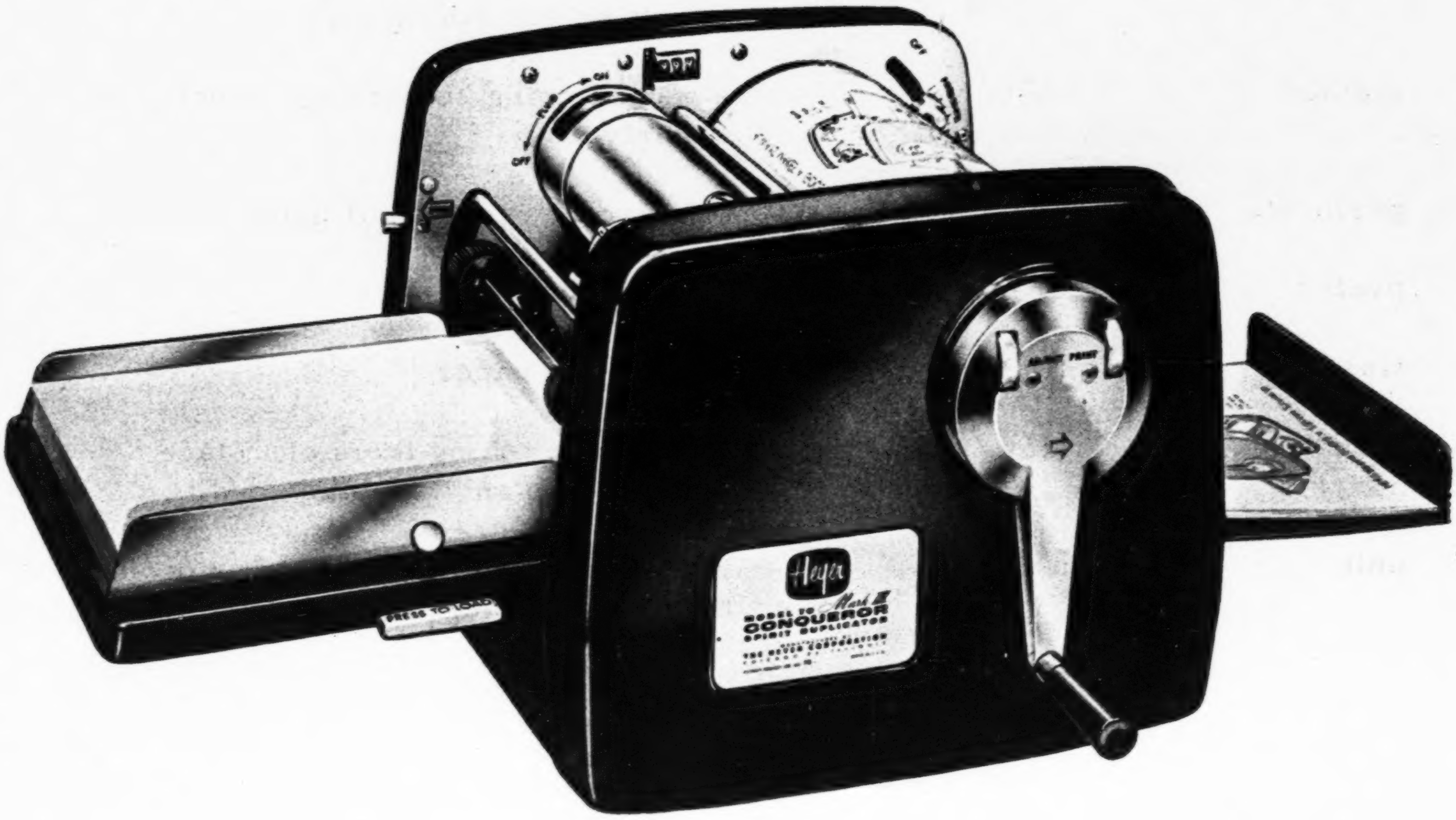
prefer - prē fẽr′ - to like better

tissue - tĭsh′ ū - a very thin paper

transfer - trăns fẽr′ - to take something from one place and put it in another place

unit - ū′ nĭt - one thing; a group of things or people thought of all together, as one

HEYER FLUID DUPLICATOR


OFF
FLUID
ON
Heyer
MODEL 70 Mark III
CONQUEROR
SPIRIT DUPLICATOR
THE HEYER CORPORATION
PRESS TO LOAD

Heyer, Inc.

OBJECTIVE: To learn how to use the Heyer Duplicator.

INFORMATION:

When we studied this machine in Lesson 2, we found there were a great many different parts. Each of them has a particular use. Only as we know how to use the machine can we get the best copies from it. Today, we will study carefully each step in using the duplicator.

INSTRUCTIONS FOR USING THE HEYER FLUID DUPLICATOR

1. Prepare the master, proofread it, and have it ready to put on the machine.

2. Check the supply of fluid (2) in the tank (3). If it is low, turn the fluid tank (21) to "Off", unscrew the cap (20), and fill the tank. Be sure that you screw the cap on tightly again.

3. Turn the fluid tank to "On". Keep the fluid control knob at Medium. Do not change this knob.

Attaching the Master to the Cylinder

4. Turn the cylinder (14) by turning the handle (11) in the direction of the arrow (counterclockwise) until the arrow in "Open clamp here" is under the master lock lever. Move lever to the left to open the clamp. Tear off master from the backing sheet.

5. Insert the top of the master into clamp. Hold the master so you do not touch the carbon. Use the scale to center the master and get it in straight. The numbers on the scale equal the width of the master. The negative (or wrong) side of the master should be up. Close the clamp by turning the lever to the right. DO NOT FLATTEN THE MASTER AGAINST THE CYLINDER WITH YOUR HAND. Do not touch it at all after the clamp is closed.

Placing the Paper

6. Push down the "Press to Load" lever (8) until it stays down. This will raise the paper fingers.

7. Fan the paper, first on one end then on the other.
   Place the paper feed rolls (5) over the slots in the paper holders.

8. Place about a $\frac{3''}{4}$ stack of paper on the feed table, sliding it all the way against the front paper stop (17).

9. Move the paper holders - by turning the knobs (7) - to the edges of the stack of paper. Be sure the paper holders are at the same number on the scale as the master is on the cylinder.

10. Pull up the "Press to Load" lever so that the fingers will rest across the corners of the paper.

11. Keep feed tension control knob (9) set at medium.
    These settings mean:

MEDIUM:	for regular paper, 16 or 20 lbs. The wrapper on the package tells you the weight of the paper. This setting is used most of the time.
LIGHT:	for thin papers.
HEAVY:	for very heavy paper or cards.

NOTE: If more than one sheet of paper feeds at a time, move the knob to a lower setting.
If the top sheet does not feed easily, move the knob to a higher setting.

12. Pull out the paper receiving tray to fit the length of the paper. Move the side guides of the paper receiving tray to fit the width of the paper.

13. Set the pressure control (15) at low (#3 or #5) and slowly increase it if you find the copies coming out too light.
    If you are going to make 200 copies, set the control at #2 to begin with.
    If it is an old master, you may have to set it higher.

14. Move the fluid control (19) to medium. If your copies are too wet, move it to light.

Printing Copies

15. Turn the handle (11) counterclockwise at a smooth, regular speed. Jerky or too-slow turning will result in light and dark copies. Look at the first copies. Check them and see if any changes need to be made.

16. To change margins:
    a. To change the top margin, turn either one of the small thumbwheels (13) on the handle. The pointer on the scale (13a) shows you how many typing lines you are raising or lowering the top margin.

    b. To change left or right margin:
    There are two ways to change the right or left margins.

        (1) Move the paper feed tray to the right or left, using knobs (7).
        (2) Open the master clamp and move the master on the numbered scale.

17. Set the counter (16) at 000. Turn the handle quickly and smoothly. When the counter reaches the number you want, lift the bar with the paper feed rolls (5) and stop turning the handle.

18. Check your finished copies before you close your machine. You might need more.

19. Remove the master. It may be saved and used again if there is still dye left on it. When storing a master, clip the slip sheet and backing sheet to it. If it is not to be saved, throw it away.

20. Put away unused paper. Take copies from paper receiving tray. If paper is dry, straighten the copies and stack them neatly.

21. Keep extra paper that has been used on one side for practice paper. Put it in the wire basket.

22. Push the receiving tray in.

23. Be sure the machine is left clean and neat.

24. Be sure you turn the FLUID TANK to OFF.

25. Turn PRESSURE CONTROL to OFF.

26. Cover the machine.

27. Special care
    a. If copies have streaks or the copies are much too light, the wick may be dirty. Remove wicks, clean off lint and carbon, and put them back.

b. If the impression roller gets dirty, remove it and clean it.

CAUTION: Be very careful with the fluid. Do not spill it on varnished surfaces like desks.

ASSIGNMENT:

Each student will run off her master from Lesson 4.

VOCABULARY:

particular - pẽr tĭk′ ū lẽr - separate, special

UNIT IV - ACHIEVEMENT TEST

TRUE OR FALSE

____ 1. We must use smooth paper to get good duplicated copies.

____ 2. The white, shiny sheet of the master unit is called the master.

____ 3. The master has three parts.

____ 4. In fluid duplicating you can put more than one color on one master.

____ 5. On the fluid duplicator, we use smooth paper to copy on because there is ink to absorb.

____ 6. Drawings can be made on a master.

____ 7. We cannot change the margins after the master is on the duplicator.

____ 8. It is very important to fan the pack of paper before putting it on the paper feed tray.

____ 9. The spirit duplicator uses a liquid that has no color and is not ink.

____ 10. When drawing on a master, we cannot use a ball point pen.

CHOOSE THE RIGHT WORDS TO FILL IN THE BLANK SPACES

1. The three parts of the master unit, when you take it from the box are __________, ____________, and ______________. (backing sheet, master, tissue sheet, carbon sheet)

2. Two other words that can be used instead of Heyer duplicator are ____________ and ____________. (fluid, Rex Rotary, spirit)

3. Two good ways to correct an error on a master are _____________ and _______________________. (erase with a pencil, use correction tape, scrape off the carbon)

4. If you find your duplicated papers too wet with the fluid, you should ______________________________. (just keep on turning the handle, check the fluid control)

5. The highest number of copies you can get from one master is ________. (100, 200, 300)

6. The white sheet of the master unit is on the front and is very ________. (smooth, rough)

7. Masters ________ be written on. (can, cannot)

8. When you type a stencil or a master, it is very important that the type be ________. (clean, dirty, large)

9. When we insert the master sheet under the clamp on the duplicator, the negative side is ________. (up, down)

10. When the master is properly inserted in the typewriter, the three parts are ________, ________, and ________.
(master, stencil, backing sheet, tissue sheet, carbon sheet)

OFFICE PRACTICE Practice Work on the Heyer Spirit Duplicator

Problem 1--Form letter with written signature and postscript. Study and follow the directions in your notebook called "How to Prepare a Master Copy." Type a master copy of the letter below.

Decide what margins to use. Leave space for the current date and the inside address. You will save time later if you put a small dot on your master to show you where you will begin to type the inside address and the date. Look--are there any enclosures? Use a ball-point pen to sign the name and write the postscript.

Address the letters to the ten people listed on page 311 in your typing book. Use the current date.

Dear Friend:

Now you can permanently protect your new car upholstery with the sparkling beauty of TRANSPARENT STARDUST seat covers. STARDUST is our own exclusive pattern! It can't be purchased any place else in the country . . . at any price!

STARDUST is made with thousands of gleaming gold stars that add richness to upholstery without hiding the color and beauty. It actually looks like part of the original upholstery design.

You can't buy a better, tailored TRANSPARENT cover than this, anywhere. The enclosed folder describes this wonderful cover, but here's the story in a nutshell. . .

Front & rear. .	$19.95	3 payments of $6.98 (postage incl.)
Front only . . .	$11.95	3 payments of $4.31 (postage incl.)

. . . 30-day FREE inspection with no obligation
. . . 3-month payment plan at no extra charge
. . . written lifetime guarantee

Why not inspect a set for your car, on a 30-day FREE trial at our expense? Just fill in and mail the enclosed coupon. We will send a set postage paid, especially tailored for your car. If you decide to keep them, send the first payment in 30 days. Otherwise return them parcel post C. O. D. There is absolutely no obligation!

Sincerely yours,

M. Fingerhut, President

Problem 2--Tabulation on a half sheet.

Statistical Typing, page 41, problem 4.
Read the directions in the book. Type the problem once on the master copy.

Use practice duplicating paper. Make a total of 20 copies. Do this by running the full sheet of paper through the machine. It will come out with one end printed. Turn the paper around and put it through the machine a second time. The other end will now be printed. Cut the papers in half. Do not save the master copy.

Problem 3--Centering

20th Century Typing, 8th edition, p. 192, problem 125 F.
Draw the first four addresses, using lettering guide and stylus. Center each address in one quarter of the page. To center the addresses, start the middle letter of the address in the center of the space. Then work from the center out to the left and to the right.

Type the master copy. Use practice duplicating paper. Make 10 copies. Do not save the master.

Problem 4--Program and menu

Brief Typing, page 88, problem 1.
Study the directions on page 87. Type the master copy. The teacher will help you.

Use practice duplicating paper. Make 10 copies. Do not save the master.

Problem 5--Tabulation

20th Century Typewriting, 8th edition, p. 187, problem 120 C.

Use practice duplicating paper. Save the master.

Problem 6--Chart

130 Basic Typing Jobs, page 17.
Type a master copy of this chart. The main heading, in all capitals, will be Typing Rough Drafts. Do not type Unit II and the paragraph at the bottom of the page. Use a ruler to draw the lines. Use ball-point pen to write the rough draft symbols.

Use practice duplicating paper. Make 10 copies. Do not save the master.

Problem 7--Report

130 Basic Typing Jobs, page 24.
Read the directions in the book. Type a master copy.

Use practice duplicating paper. Do not save the master.

TEST--Fill in form letter

Type a master copy of the form letter on the next page. Use modified block style, mixed punctuation and no paragraph identions. Leave space for the date and inside address. Sign Mr. Erickson's name at the end of the letter.

Use letterhead paper. Make 12 copies. Save the master copy.

Send the letters to the following people. Type the date, the inside address, and the salutation and fill in the other information in the blanks. When you finish, give all the letters and the master to your teacher.

Mrs. Raymond C. Burton 190 George Street New Brunswick, N. J. 08901	Account #M 77447 Balance $46.20 Payments 7-16-59 $5.30 8-17-59 6.98
Mr. Edward T. Robinson One Main Street Bound Brook, N. J. 08805	Account #R 23254 Balance $15.85 Payments 8-1-59 $4.50 9-5-59 5.98
Mr. James T. Owens 107 Emerson Road Somerset, N. J. 08873	Account #B 6983 Balance $5.98 Payments 7-10-59 $13.00
Mrs. Paul Judson 848 Washington Road Parlin, N. J. 08859	Account #P 98745 Balance $17.95 Payments 6-8-59 $3.95 7-1-59 4.98
Miss Mary Frances Wynn 18 Amboy Avenue Metuchen, N. J. 08804	Account #W 66843 Balance $8.75 Payments 7-22-59 $7.67 8-11-59 6.75
Mr. Richard L. Parker 48 Cleveland Avenue Old Bridge, N. J. 08857	Account #0 99678 Balance $8.66 Payments 6-6-59 $5.98 7-15-59 7.25

Miss Frances O. Shelby
24 Woodland Avenue
North Brunswick, N. J. 08902

Account #S 67533
Balance $29. 00
Payments
8-10-59 $10. 98

Mrs. Donald B. Murphy
5 Main Street
Spotswood, N. J. 08884

Account #M 76447
Balance $5. 30
Payments
5-15-59 $8. 66
7-15-59 6. 98

Mr. Maxton G. Shrum
200 New Brunswick Avenue
Fords, N. J. 08863

Account #T 99885
Balance $15. 38
Payments
6-25-59 $4. 25
7-18-59 5. 75

Mr. Edward T. Flannigan
36 Green Street
Woodbridge, N. J. 07095

Account #S 55434
Balance $9. 38
Payments
6-23-59 $10. 98
7-4-59 3. 89

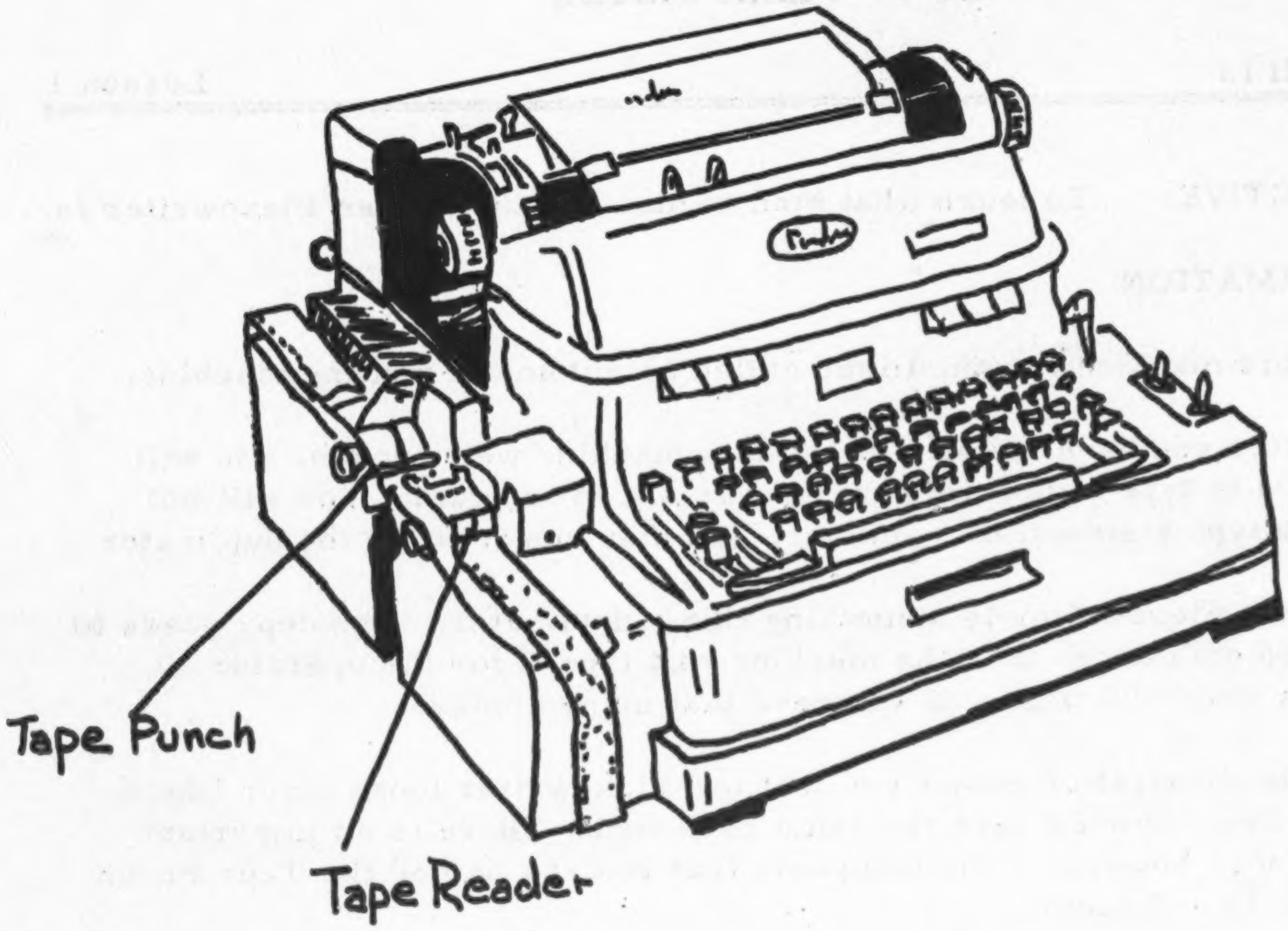
Dear

Thank you for your recent inquiry regarding payments on your account. (P) Your Account No. shows a balance of $ with the following payments having been received and credited.

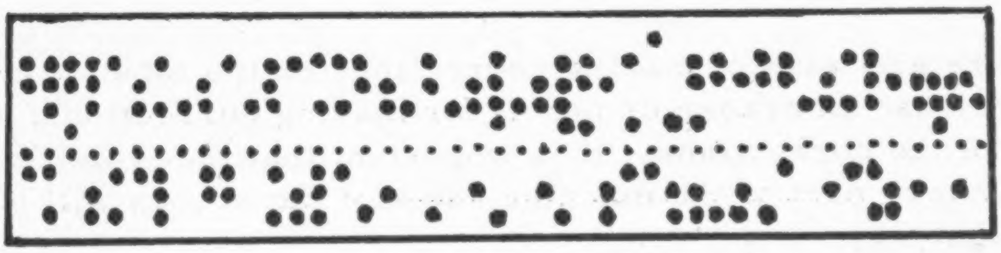
_______________ . . . . _______________

_______________ . . . . _______________

On the back of this letter, please advise us of any payment missing. If payment was by check, tell us what endorsement name is stamped on it, in what bank and on what date we deposited it, and in what name the check was signed. If the payment was by money order, tell us the money order number, amount, date, and in what name it was purchased. (P) For your convenience a special reply envelope is enclosed, and we thank you for your cooperation. Sincerely yours, D. Erickson, Credit Manager


Tape Punch
Tape Reader

FLEXOWRITER



FLEXOWRITER TAPE

Friden, Inc.

UNIT V - FLEXOWRITER

What It Is **Lesson 1**

OBJECTIVE: To learn what kind of machine the Friden Flexowriter is.

INFORMATION:

This machine is sometimes called an automatic writing machine.

After you have learned to use this machine well enough, you will not have to type important papers over and over again. You will not have to type a stencil or a master, and then run it off on the duplicator.

This Flexowriter is something like a duplicator. The copy needs to be typed only once; then the machine will type it for the operator 50, 100, or even 500 times, if you need that many copies.

The illustration shows you that the Flexowriter looks much like a typewriter. It does have the same keyboard. There is an important difference, however - the two parts that you see named the Tape Punch and the Tape Reader.

You will find that typing on the Flexowriter is easy. You simply type at your normal speed or a little slower. But first, you will have pushed a button, so that while you are typing the machine will be making a tape of the thing you are typing. Later, you can put this tape into the tape reader, and the machine will "read" the tape and type it, exactly as you typed it.

There are ways of making corrections on the tape. The operator will never use an eraser or pencil for making corrections; the machine will make the corrections. It is important that the typist know how to operate every part of the machine, so that the errors will be corrected in the right way.

Again, it is true that, if the operator makes the tape correctly, the machine will type it correctly. We learned this same thing about the mimeograph and the duplicator. We know that a machine gives us back exactly what we put in it. The Flexowriter types by itself at the rate of 100 words per minute.

Look at the illustration of a Flexowriter tape on the preceding page. The machine can read this tape perfectly. You will learn to read it also. An operator must know how to read the tape, so she can find what is being typed by reading the tape. There are several reasons for this.

We will come to them later in the study of this machine.

This is the only kind of machine that will make letters by the hundreds, and make every one of them an original. They will not look like mimeographed papers, nor like duplicated letters. The Flexowriter produces originals only.

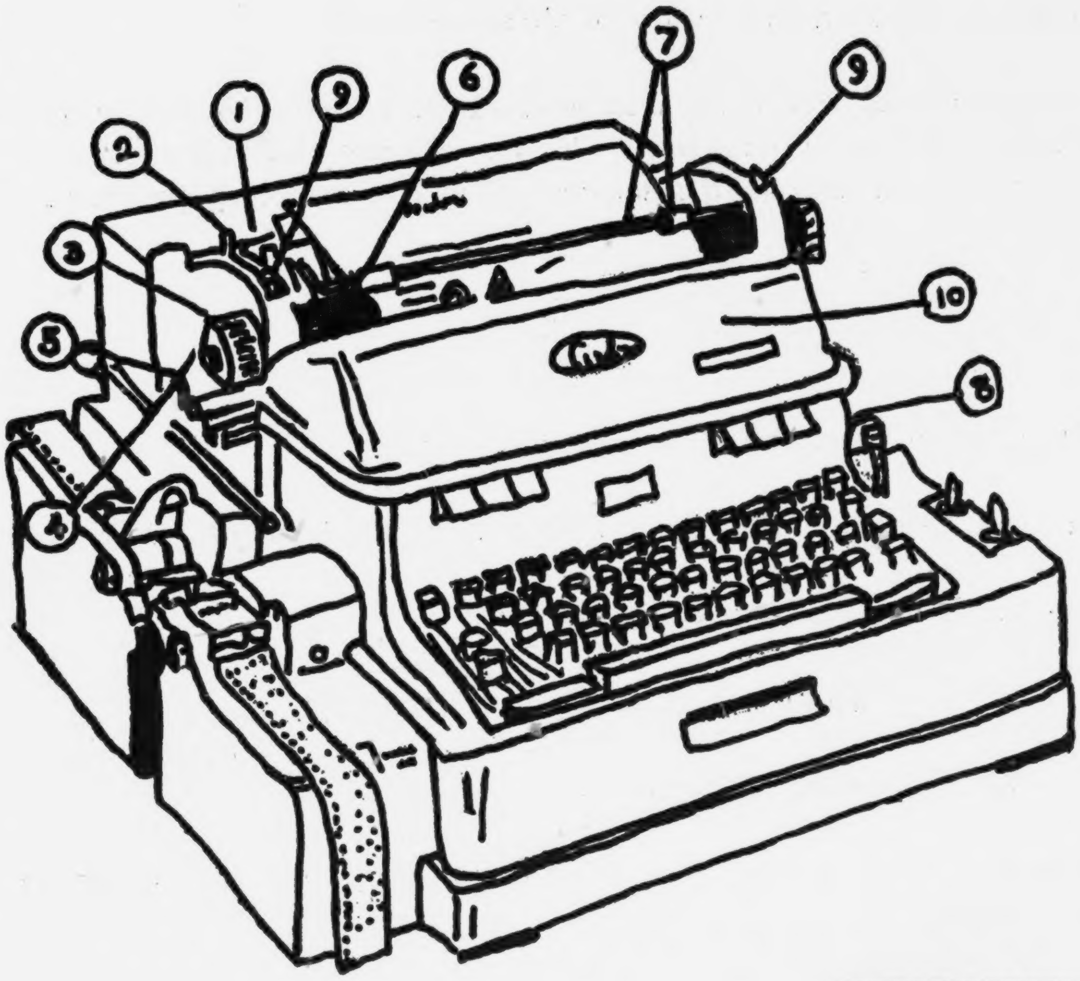
ASSIGNMENT:

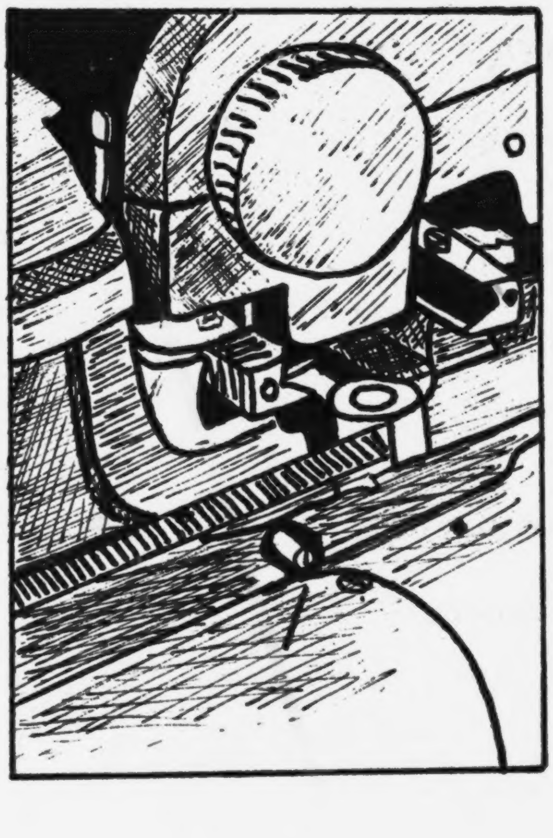
1. What other machine is the Flexowriter like?
2. What can the Flexowriter do that no other machine can do?
3. Is it true that the machine can punch the tape?
4. Can you read the tape as fast as the machine can?
5. Complete the following statement:

   If the machine is going to read the tape right, then the operator must have typed it ______________.

VOCABULARY:

exact	-	ĕg zăkt′	-	the same, strict, accurate, with no difference
Friden	-	Frē′ dən	-	maker of the Flexowriter
Flexowriter	-	flĕcks′ ō rīt ər	-	a machine like a typewriter; it will make a tape, read a tape, and type automatically
original	-	ō rĭj′ ĭ nəl	-	first, earliest; not copied
precede	-	prē sēd′	-	go before; come before


7
9
1
9
6
2
3
10
5
8
4



Features, Names and Uses of Parts Lesson 2

OBJECTIVE: To learn the names of some of the parts of the machine and their usage.

INFORMATION:

We will look at ten of the parts of the Friden Flexowriter and see how much the machine is like the typewriter.

1. Line space lever
2. Paper release lever
3. Platen knobs
4. Platen variable button
5. Margin release lever
6. Platen
7. Paper bail and rolls
8. Ribbon position lever (on right side of machine - see small illustration)
9. Carriage release buttons
10. Top cover plate

When is this machine used?

It is used to type letters when a company wants each letter to look as if it were individually typed and not like a mimeographed sheet. A typed letter looks more important and seems more personal. This machine is also used to type stencils.

What does this machine look like?

It looks like an electric typewriter plus a special part which punches a tape in code, and then the machine can read the tape.

Who makes these machines?

The Friden Company makes the Flexowriter. Similar machines are made by IBM and Royal.

How does the Flexowriter work?

It works like a player piano. The original letter is typed on the typewriter part of the machine. At the same time, a tape is being punched of the letter. This is done in a code. When this tape is put in the Tape Reader, the typewriter will "read" the tape and type an exact copy of the original letter.

If you are sending the same letter to many different people, you insert the paper (after the tape has been made), type the date and the inside address, and the machine will type the rest of the letter. A code can be punched in the tape to stop the machine so that you can type in a word, a number, or a sentence, any place that you may want to. (These words or names that you type in would be the inserts.)

ASSIGNMENT:

1. Are the parts we just talked about much like those on a typewriter?

2. Will the copies from the Flexowriter look as though they had been done on a mimeograph?

3. Did you ever see a player piano?

VOCABULARY:

code	kōd	a system of marks, symbols, or hole-punches that mean letters or words
individual	ĭn dĭ vĭd′‿ū əl	one, not more nor less than one; each person is an individual
variable	vâr ĭ ȧ b'l	changeable; can be made different
visible	vĭz′ ĭ b'l	can be seen

UNIT V - FLEXOWRITER

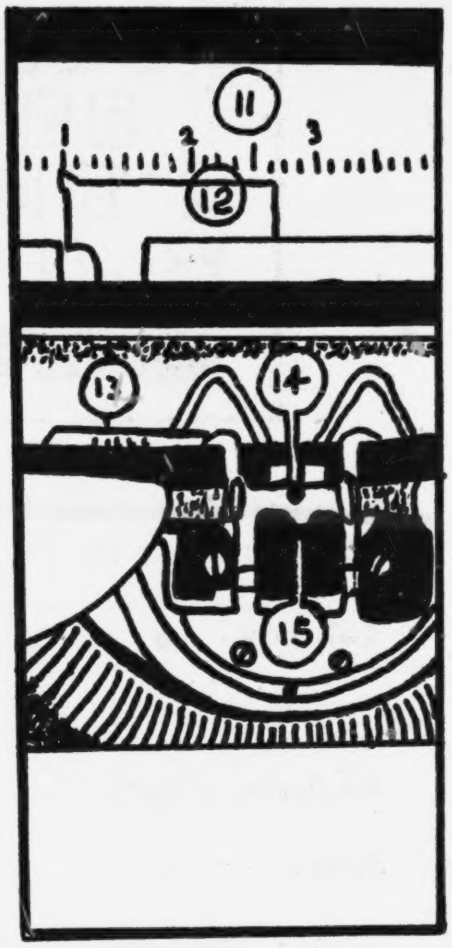
More Features — Lesson 3

OBJECTIVES: To learn the names and uses of more parts of the Flexowriter.

INFORMATION:

We will look at these numbered parts of the machine:

11. Paper table
12. Paper guide
13. Writing line finder
14. Type guide
15. Front paper scale



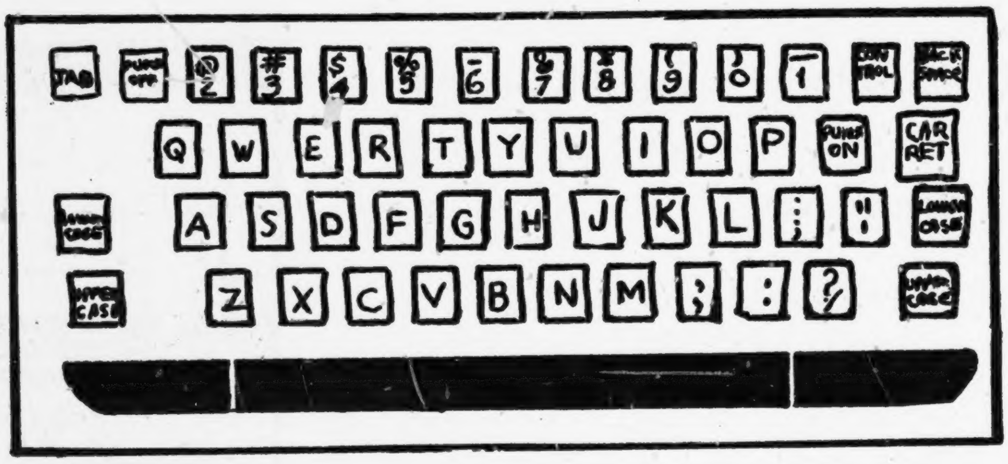
ASSIGNMENT:

1. Are any of these parts different from those on a typewriter?
2. Do you think it is important to know about these parts?
3. Can the machine correct an error if the operator does the wrong things?
4. If the machine is reading a tape, and it types a misspelled word, what happened before the tape was put on the reader?

VOCABULARY:

align	-	ȧ līn′	-	to get things in a straight line
indicate	-	ĭn′ dĭ kāt	-	to point out, to show; also to suggest rather than actually pointing something out
indication	-	ĭn dĭ kā′ shŭn	-	a sign, a hint
support (v.)	-	sŭ pôrt′	-	to hold up

OBJECTIVE: To learn the use of the switches and special keys on this machine.


TAB
PUNCH OFF
@ 2
# 3
$ 4
% 5
6
& 7
* 8
(9
) 0
1
CONTROL
BACK SPACE
Q
W
E
R
T
Y
U
I
O
P
PUNCH ON
CAR RET
LOWER CASE
A
S
D
F
G
H
J
K
L
" '
LOWER CASE
UPPER CASE
Z
X
C
V
B
N
M
;
:
? /
UPPER CASE

You will find the following keys on the Flexowriter keyboard; some of them are familiar to you:

Tab key

Carriage return key

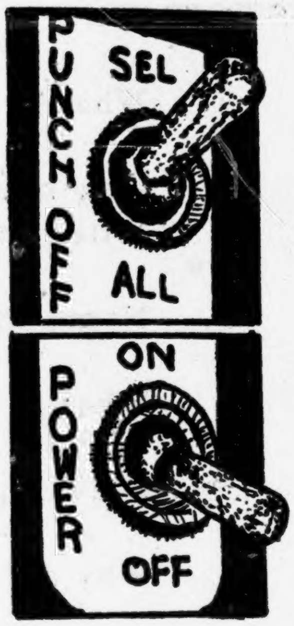
Backspace key

Spacebar

Lower and upper case keys. -- These lock the keyboard in place for typing a capital or small letter. There are upper and lower case keys on both sides of the keyboard.

There are three operations to do when you want a capital letter and the rest of the work in small letters. If you want to type the word "Flexowriter," for example, you will:

1. Touch the upper case key with tip of little finger.
2. Type the letter F.
3. Touch the lower case key with tip of little finger.
4. Continue to type.



Illustrated here are two switches. The back switch or punch switch is kept in the center or OFF position when not making a tape.

When you want the typing to go on a tape, put the PUNCH SWITCH on ALL.

The POWER SWITCH must be turned on in order to type. TURN IT OFF WHEN YOU STOP TYPING.

The light in the panel above the keyboard is turned ON when you are making a tape. It will remind you to turn the switch off when you do not want to make a tape.

START READ switch - starts the tape reader.

STOP READ switch - stops the tape reader while the machine is typing automatically.

STOP CODE switch - puts a code on the tape so that the tape reader will stop the typing. This could be either at the end of the letter, or at a place where you want to type in an insert.

TAPE FEED switch - feeds tape through the tape punch while you hold the switch down. This switch is also used to help correct an error.

It was mentioned before that it is important for the operator of this machine to know what the codes mean. Below are the codes it is important to know early:

Lower case	oooo. o
Upper case	oooo. o
Carriage return	o .
Backspace	ooo. o o
Spacebar	o .
Tape feed	oooo. ooo
Stop code	o. oo
Tab	ooo. oo
Punch on	o o. o
Punch off	o o. ooo

ASSIGNMENT:

1. What is a switch?
2. How many different things must you do if you want a capital letter at the beginning of a word?
3. Name the things you must do to get a capital letter.
4. What is a code?
5. Is it important to know these codes?
6. Why did you answer question No. 5 as you did?
7. What does "automatic" mean?

VOCABULARY:

switch	-	swĭch	-	a small lever that turns something on or off
punch	-	pŭnch	-	to poke, to make a hole sharply
auxiliary	-	ŏg zĭl′ yȧ rĭ	-	helping, assisting
select	-	sē̆ lĕkt′	-	to pick out, to choose

UNIT V - FLEXOWRITER

Punching a Tape **Lesson 5**

OBJECTIVE: To learn how to punch a tape on the Flexowriter.

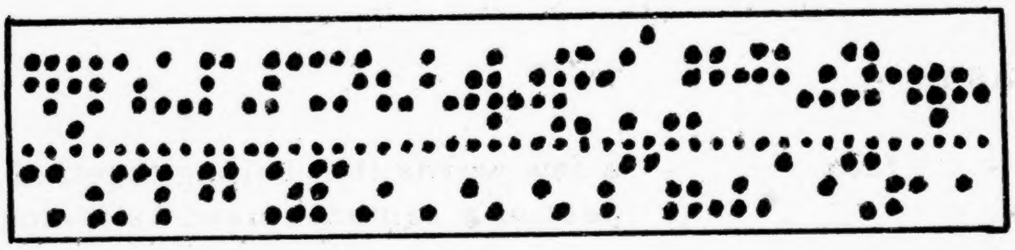
INFORMATION:

We will begin today to learn how to punch a tape. However, there are two very important facts for you to remember before you begin.

FIRST: If the tape is punched correctly, the Flexowriter will type the work correctly.

SECOND: When a tape is correct, the operator does not need to even touch any key or any switch, or any part of the machine while it is typing. The Flexowriter will do everything that needs to be done, because YOU have put it on the tape.

There is one exception to the second point above. If you have put a stop code on the tape, so you can type a name or address or a phrase in the letter, then you will have to type it. But you will not need to stop the machine; you will need to push the start-read switch after you are finished typing the insert.



HOW TO PUNCH A TAPE

1. Set the left margin.
2. Set tab stop for any other margins to be used.
3. Insert the paper.
4. Turn power to ON.
5. Turn punch switch to ALL. The light will go on in the front panel of the machine.
6. Hold down the tape feed switch until about 3 inches of tape has come out of the tape punch. Let the tape go down between the tape punch and the tape reader.
7. Touch the carriage return key.
8. Begin to type.
9. When you are finished typing, press the stop code switch. This punches a code in the tape which will turn off the tape reader at the end.
10. When a tape is to be used over and over, glue the ends together. If using the tape only once, do not glue the ends together.

ASSIGNMENT:

Demonstration and student's participation.

VOCABULARY:

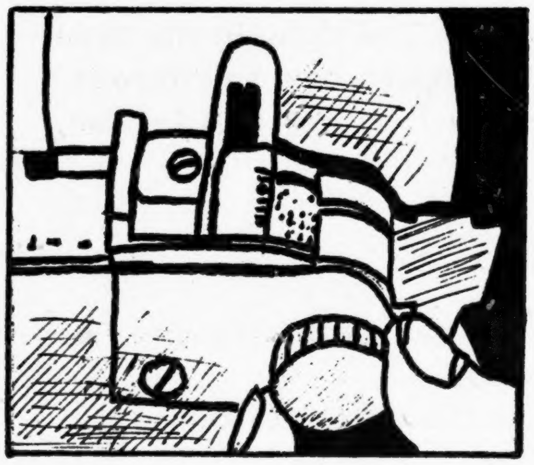
phrase - frāz - a few words that belong together; a short part of a sentence used as a single word

UNIT V - FLEXOWRITER

Error Correction While Typing — Lesson 6

OBJECTIVE: To learn how to correct an error while making a tape.

INFORMATION:



Example: You have typed "sitiation" instead of "situation."

1. Use the feed knob on the left side of the tape punch and turn the tape back to the wrong code (or letter). Turn it back one notch for n, one for o, one for i, one for t, one for a, and one for i. "I" is the code or letter that is wrong. It will be over the punch station. Do you have the "i" over the punch station? This is why you need to be able to read the code.
2. Touch the tape-feed switch the same number of times as you turned back the tape (in this case, 6 times).
3. Type the word correctly, beginning with the corrected letter or character. Your typed copy will not be right, but that does not matter. It is the tape that must be correct. Your practice copy will look like this: sitiationuation.
4. REMEMBER: A capital letter has 3 codes (upper case code, the letter itself, lower case code).

ASSIGNMENT: Review the steps in punching a tape.

1. What does the stop code do?
2. Where must the punch switch be when you are making a tape?
3. Why do we glue the ends of the tape together?
4. How can you tell quickly that the machine is set right for you to be typing a new tape?
5. Look at the pictures of the machine, and write down the steps in correcting a tape.

VOCABULARY: None.

Error Correction After Typing

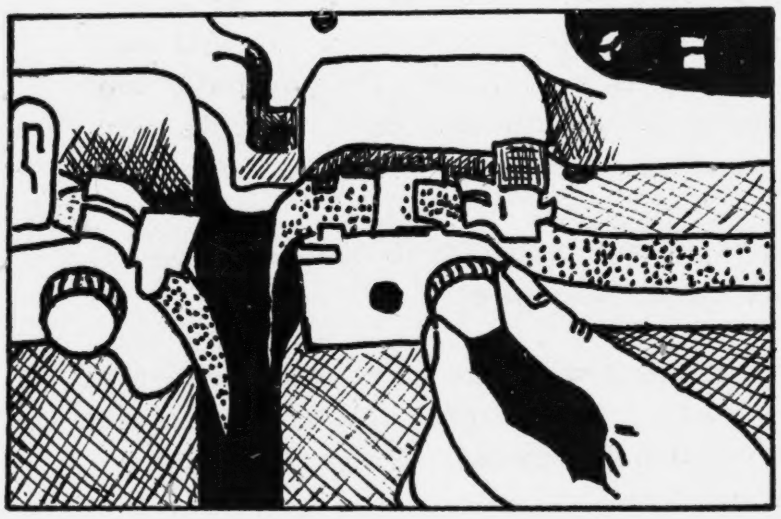
Lesson 7

OBJECTIVE: To learn how to correct errors found after the tape is finished.

INFORMATION:

Suppose that you have finished typing the tape. You thought the tape had no errors, but you have found one. You will learn how to correct the error without typing the whole letter over again. We will let the machine type; it is much faster that way.

How to correct errors found after you have finished typing



1. Insert sheet of paper into the machine.
2. Insert the tape into the tape reader.
3. Turn the punch switch to ALL. Feed out 3 inches of tape. Touch the start read switch.
4. Follow the copy as the machine types. As you get near the error, move the start-read switch up and down so that only one code is typed at a time.

When the last correct code has been typed, stop the tape reader with the start-read switch and then touch the stop read switch before releasing the start-read switch.

5. Type the correction. This will go on the new tape.
6. Turn the feed knob on tape reader forward one notch for each wrong code so that it will not read them.
7. Press the start-read switch and finish making the new tape.
8. When the tape reader has stopped, touch the stop code and feed out about 3 inches of tape. Tear it off.

ASSIGNMENT: Practice on the machine.

1. What would you do if you had two errors on one tape?
2. Is the tape reader the front part or the back part of the machine?
3. Why do we feed out 3 or more inches of tape at both ends?
4. Is this way to correct errors better than typing a new tape? Explain.

VOCABULARY: None.

UNIT V - FLEXOWRITER

How To Read a Tape

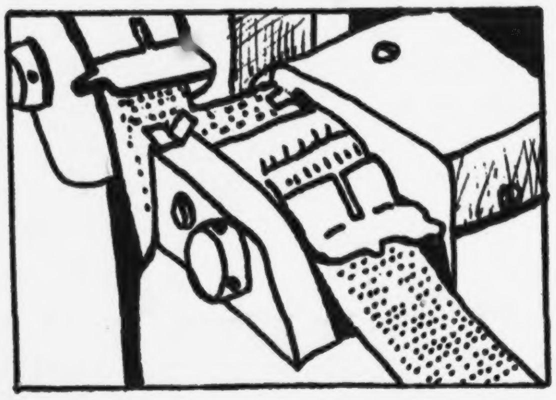
Lesson 8

OBJECTIVE: To learn how to read a tape.

INFORMATION:

"Reading a tape" means having the machine type whatever you have typed earlier. When you typed, the machine punched the tape. Now the machine will read the same tape.

How to Read a Tape.



1. Insert the paper in the machine that you want the letter typed on. Turn it to the correct starting line.
2. Put the punch switch in the OFF position.
3. Insert the tape in the tape reader. The blue printing on the tape should be up and to the left side. Be very sure the small holes in the tape are caught on the small pinwheel.

   If this is the first time you are reading the tape and you have not pasted it together yet, let the long end of the tape go down between the tape punch and the tape reader.

4. Touch the start-read switch. The machine will type automatically until it comes to a stop code. Then it will stop. (If you have forgotten to put a stop code at the end, it will just keep going and going.)

ASSIGNMENT:

1. Should you have paper in the machine before pressing the start-read switch?
2. Why is it necessary to put a stop code at the end of the typing?
3. Can you think why we keep the long end of the tape in the basket?
4. How do you insert the typed tape in the tape reader? Can it go in any way, or does it have to have a certain side up and out?

VOCABULARY:

pinwheel - pĭn′ whēl′ - a small wheel with sharp points

How to Punch an Address Tape — Lesson 9

OBJECTIVE: To learn how to punch an address tape while typing inside addresses in the letters typed by the Flexowriter.

INFORMATION:

If you have a taped letter that you want to go to many different people, probably you will want envelopes to put these same letters in, so we will learn how to make a tape with all the addresses on it. We must make this tape at the same time as we type the inside addresses, or it will not save any time.

We will not punch the tape of addresses at any separate time, or we may just as well type on the envelopes. Any time we use information that is already on a tape, we do it to save the time of typing again.

How to punch an address tape while typing the inside addresses in letters:

Before you insert the inside address in a letter, the Flexowriter will type the date; then the carriage will return and space down to the right line for the inside address; then it will stop (because you put a stop code there when you punched the letter tape).

You will turn the punch switch to ALL. The light will go on. You will type the inside address and put in a Stop Code at the end. Then turn the punch switch to OFF. The light will go off. Then you continue the letter in the usual way.

When you are finished with all the letters, you will have made a new tape. It will have all the addresses on it. You take off the letter tape. Insert the address tape in the tape reader. Insert an envelope in the platen and push the tape-read switch; the machine will type the first address on the envelope and stop.

You must remember to:

1. make no mistakes while typing in the addresses in the letters;
2. set the line-space lever at 2 for the envelopes, so you will double-space on the envelopes;
3. reset the left margin so that it will be suitable for the envelopes;
4. chain-feed the envelopes.

REMEMBER! The reason for making an address tape is to save time. Do not make one unless you can do it at the same time that you are inserting the addresses in the letters.

ASSIGNMENT:

1. Suppose you are punching an address tape and you make an error while typing the address in the letter. What should you do?
2. Would it ever be right to just type names and addresses on a paper so you can have an address tape?
3. When you type the inside address on a letter, you single space. Why do you double space when you type on the envelope?
4. Would you paste the two ends of an address tape together?

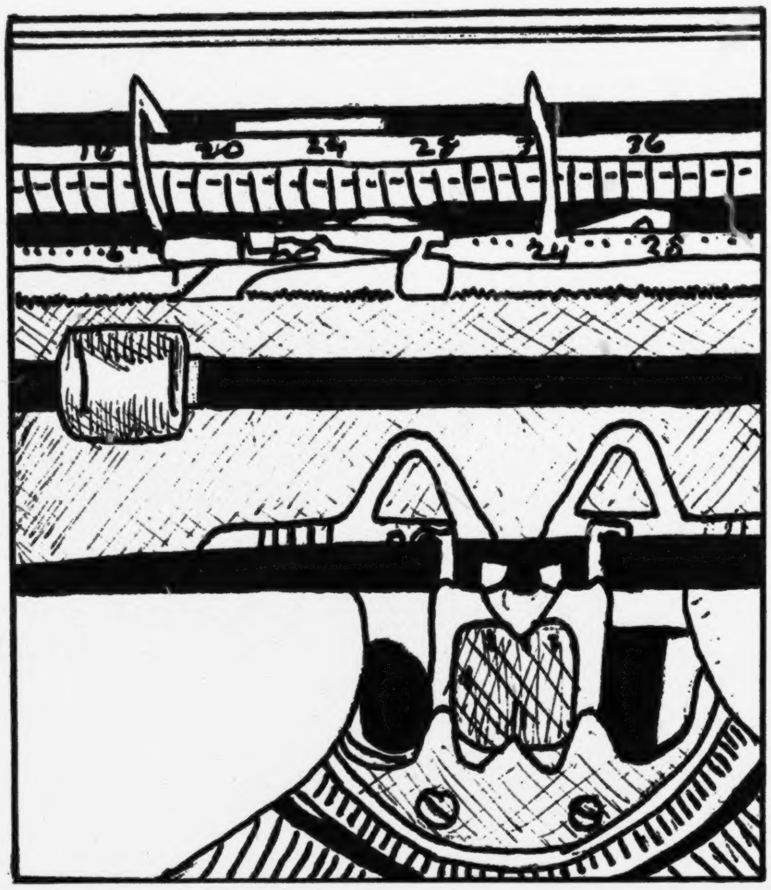
VOCABULARY: None.

UNIT V - FLEXOWRITER

Margins and Tap Stops **Lesson 10**

OBJECTIVE: To learn how to set the margins and tab stops on the Flexowriter.

INFORMATION:



If a Flexowriter has elite type, all tab stops must be positioned in increments of two letter spaces. (This means that the spaces on the tab rack and margin rack are 2 spaces wide, so you can change the settings only by 2, 4, 6, etc. spaces.)

Tip back the paper table. Notice that the markings on the margin rack and the tab rack are the same as those on the front paper scale. You will look at the front paper scale to know where to put the tab stops

The margin stop is set by pressing down on the middle of the stop and sliding it along the rack to the place where you want the left margin. The right end of the margin stop tells where the margin has been set.

We keep the tab stops in a container. It is very important that you do not drop them down into the machine. We cannot get them out. Be sure they are in the container when not in use.

ASSIGNMENT:

Practice assignment on the machine.

VOCABULARY:

tilt - tĭlt - to tip a little or part way over

rack - răk - a bar or frame or stand that holds things

elite - ĕ lēt′ - small, tiny; also very special

increment - ĭn′ krĕ mĕnt - a small amount added on

OBJECTIVE: To learn how to prepare a stencil or master on the Flexowriter.

INFORMATION:

If you want to type a stencil on the Flexowriter with a perfect tape, you will need to follow the rules you have learned.

1. Punch a perfect tape of the information that is to go on the stencil.
2. After you have the tape punched, type it once using the tape reader, to be sure there are no errors.
3. Clean the type very well.
4. Insert the stencil in the machine.
5. Set the ribbon lever in the half-way position. This is the stencil setting; the machine will type without the ribbon.
6. Push the paper bail rolls to the side of the stencil.
7. Press the start-read switch, and the machine will type a stencil with perfect typing. There will be no light and dark typing.
8. It is best to use a stencil with a film on the top on the Flexowriter, if one is available. The film acts as another cushion for the keys to strike on.

ASSIGNMENT:

1. Do you think it would be a good idea to type a stencil from a punched tape?
2. Think of three reasons why the stencil might be done better this way.
3. Would you glue the ends of the tape together if you were going to type just one stencil?

VOCABULARY: None.

UNIT V - FLEXOWRITER

Care of the Flexowriter — Lesson 12

OBJECTIVE: To learn how to take the best care of the machine.

INFORMATION:

1. Always cover the Flexowriter when it is not in use. If dust gets into the machine, dust it with a long brush. Keep the dust from around the keyboard. Keys can get jammed if there is dust in the machine.

2. Clean the type often. Always brush the dust away from the type basket and toward yourself.

3. Be very careful to keep the tab stops in the container. They are very easily lost if you lay them on the desk.

4. When you are punching or reading a tape, keep the tape from falling on the floor. Dirt from grimy tape may fall into the tape reader and cause trouble with the machine. Also, if the tape is allowed to drop on the floor, it is very easy to step on it or tear it.

VOCABULARY:

grimy - grī′ mĭ - dirty, greasy

UNIT V - ACHIEVEMENT TEST

1. The Flexowriter is a kind of automatic typewriter.
   Is this true? ________

2. What is the name of the automatic typewriter in our classroom?

3. When is the Flexowriter used?

4. Can you type on a machine if the power is OFF?

5. What is the code for:

   lower case
   upper case
   space bar
   tape feed
   stop code
   tab

6. Can you punch a tape if the punch switch is in the center?

7. What switch is used to take out a wrong code?

8. Why do you need to feed out 3 inches of tape at the beginning and end of a letter?

9. How many codes does a capital letter have?

10. Do you erase to correct an error on the tape?

11. When you put a stop code on the tape, what will happen when the tape reader reads this?

Practice Work on the Friden Flexowriter

1. Get acquainted with the machine.
   Use the booklet, Manual of Instructions.
   Study pages 8-13, and pictures on pages 18, 20, 22, 23, 24, 43-44, and 46.

2. Drills--these drills are for practice on the keys.
   Turn the motor to ON.
   Use the book, Typing for Accuracy.
   Alphabetic sentences, page 50, 2 times, 60-space line.
   Capital letters, page 22, drill 3, once; page 23, paragraphs #2 and #4, once, 70-space line.
   Special symbols, pages 102-103, once, 70-space line.

3. Practice making a tape.
   Study and follow the directions in your notebook called, "How to Punch a Tape."
   Use the book, Typing for Accuracy.
   Page 110, paragraph 4
   Page 111, paragraph 5
   Page 112, paragraphs 10 and 11
   Directions: Punch a tape of the first paragraph. Make one copy automatically of the paragraph from the tape. If it is correct, go on to the next paragraph and do the same thing. If it is not correct, punch a new tape before going on.

4. Problems

   a. 20th Century Typing, 8th edition, page 71.
   Use plain white paper. Punch a tape of the letter. Type this heading at the top of the paper: PERSONAL BUSINESS LETTER in BLOCK STYLE with OPEN PUNCTUATION.
   Make 3 copies of the letter. Punch holes to fit notebook.

   b. Make a new tape of this same letter. Use plain white paper. Use modified block style with paragraph indentions and mixed punctuation. Type this heading at the top of the paper: PERSONAL BUSINESS LETTER in MODIFIED BLOCK STYLE with MIXED PUNCTUATION and PARAGRAPH INDENTIONS.
   Make 3 copies of the letter. Punch holes to fit notebook.

c. 130 Basic Typing Jobs, page 7.
Use letterhead paper. Punch a tape of this letter. Type this heading above the letterhead: BUSINESS LETTER with SPECIAL PARTS in BLOCK STYLE with OPEN PUNCTUATION. Make 3 copies of this letter. Punch holes to fit notebook.

d. Make a new tape of the same letter. Use modified block style with indented paragraphs and mixed punctuation. Use letterhead paper. Type this heading above the letterhead: BUSINESS LETTER with SPECIAL PARTS in MODIFIED BLOCK STYLE with MIXED PUNCTUATION. Make 3 copies of the letter. Punch holes to fit notebook.

e. 130 Basic Typing Jobs, page 14.
Use letterhead paper. Punch a tape of this letter. Use modified block style with indented paragraphs and mixed punctuation. Type this heading above the letterhead: LETTER with NUMBERED, CENTERED PARAGRAPHS. Make 3 copies. Punch holes to fit notebook.

f. 20th Century Typing, 8th edition, pages 296, problems 1-5.
Read the directions in the typing book. Use letterhead paper. Use the letter style and form of punctuation that you want to. Punch a tape of the letter. Put in a stop code in each place that you want the typewriter to stop for you to fill in something.

Type each letter automatically. Type in the inside address and the other information given in each problem. At the same time that you type the inside address, make a tape of this to use when you type the envelopes at the end.

Type all the envelopes, using the address tape.

g. 20th Century Typing, 8th edition, page 296, problems 1, 2, 3, and 4.
Read the directions in the book carefully. Use letterhead paper. Do not make any carbon copies. Punch a tape of this letter. Type 3 letters automatically.

TEST

20th Century Typing, 8th edition, page 288, problem 1.
Omit the date, inside address, and salutation from the tape. Type each letter automatically: type in date and send to the names on page 289. As you type the inside address, make a tape of them to use when you type the envelopes. Type the envelopes from the tape.

UNIT VI - PHOTOCOPYING MACHINES

What Kind of Machine the Photocopier Is — Lesson 1

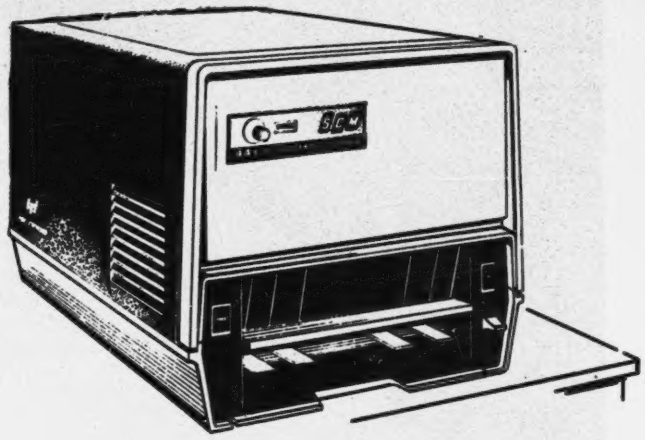
OBJECTIVE: To learn what kind of machine the photocopier is.

INFORMATION:

1. Photocopying makes us think immediately of the word "photograph." It makes us think of taking pictures, and taking pictures with a camera. That is just what a photocopying machine does. It takes pictures.

   In an office, if pictures are taken, they would be taken of letters, invoices, drawings, or maps.

   Can you think of any time when a person in an office would want to have a picture of a letter or any other paper? These machines cost a great amount of money to buy. Wouldn't it be better to ask to have a copy of the letter typed?



SCM DRY COPIER

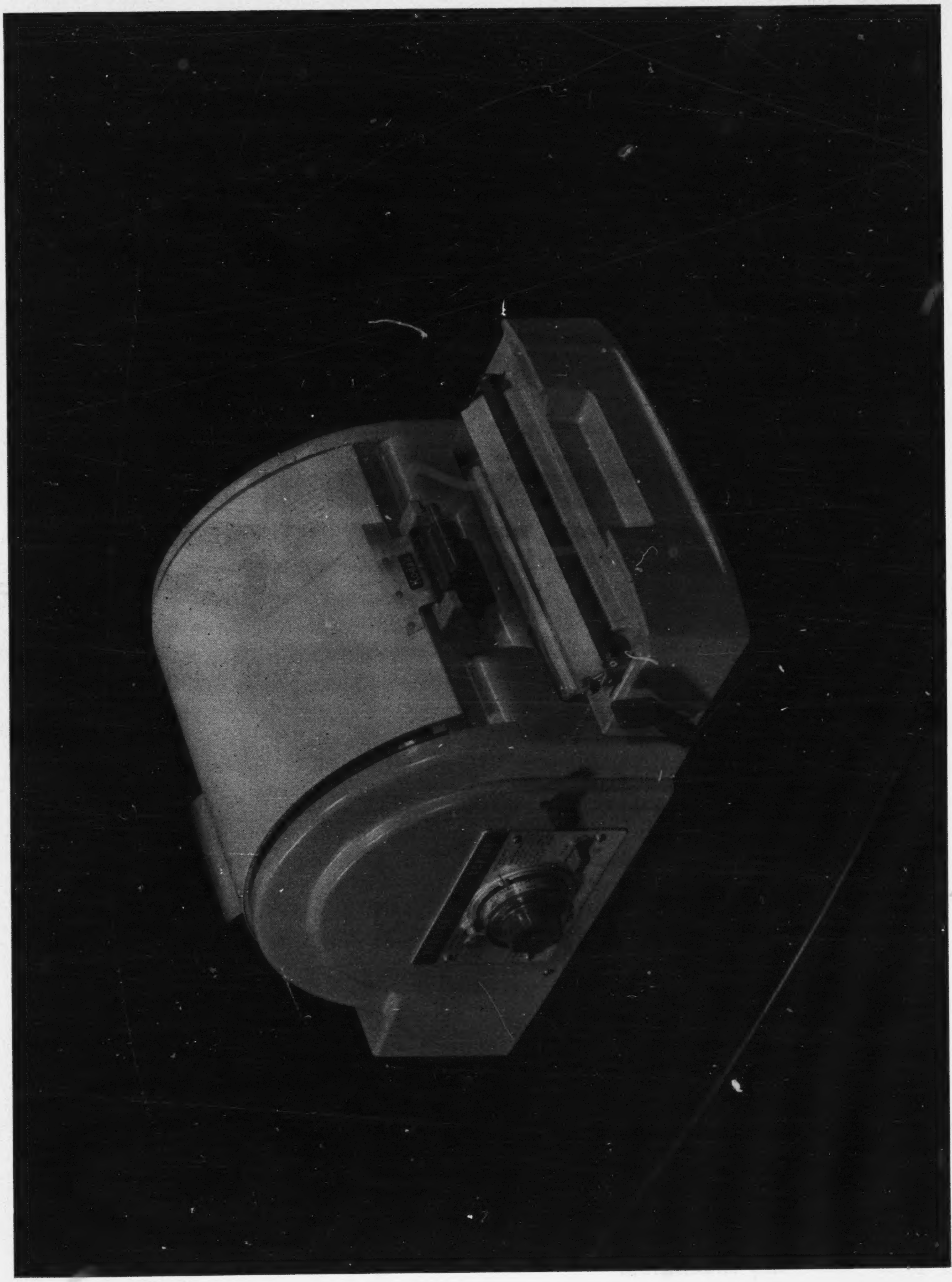
2. There are two kinds of photocopiers.

   a. Wet machines
   These machines have a liquid in them which is needed to make the picture. With a wet machine, some one always has to make sure the liquid is mixed and put in the machine before it is needed. The fluid must be kept at the right temperature at all times. Then it is always ready to be used. The Kodak Verifax is a wet machine. It has a liquid in it.

   b. Dry machines
   These machines are extremely easy to use. Usually the operator just starts a clean, new sheet of paper and the copy she wants duplicated, through the machine at the same time, and the new copy comes out completed.
   There is no problem with keeping the liquid in these machines. They are always ready to use.

   There are some wet copiers that look very much like these dry machines.

VERIFAX BANTAM WET COPIER



EASTMAN KODAK COMPANY

3. When a photocopier is used.

A photocopier is used when an exact copy is needed of a paper. There can be either typing, or printing, or drawing, or handwriting on the paper. The handwriting might be a signature, or it might be figures. It could also be a notation that someone has made. The Verifax copier will take a picture of all of these kinds of writing on the paper, but some machines will not. Some machines will take a picture of every color of writing or printing; others will not.

This kind of copy is not the same as typing a copy. Will you agree that if a letter is copied by a typist, there could be an error in typing? There could also be changes made by someone. This can never happen on a copying machine. This machine never makes an error. It copies exactly what it sees on the original. There can be no change.

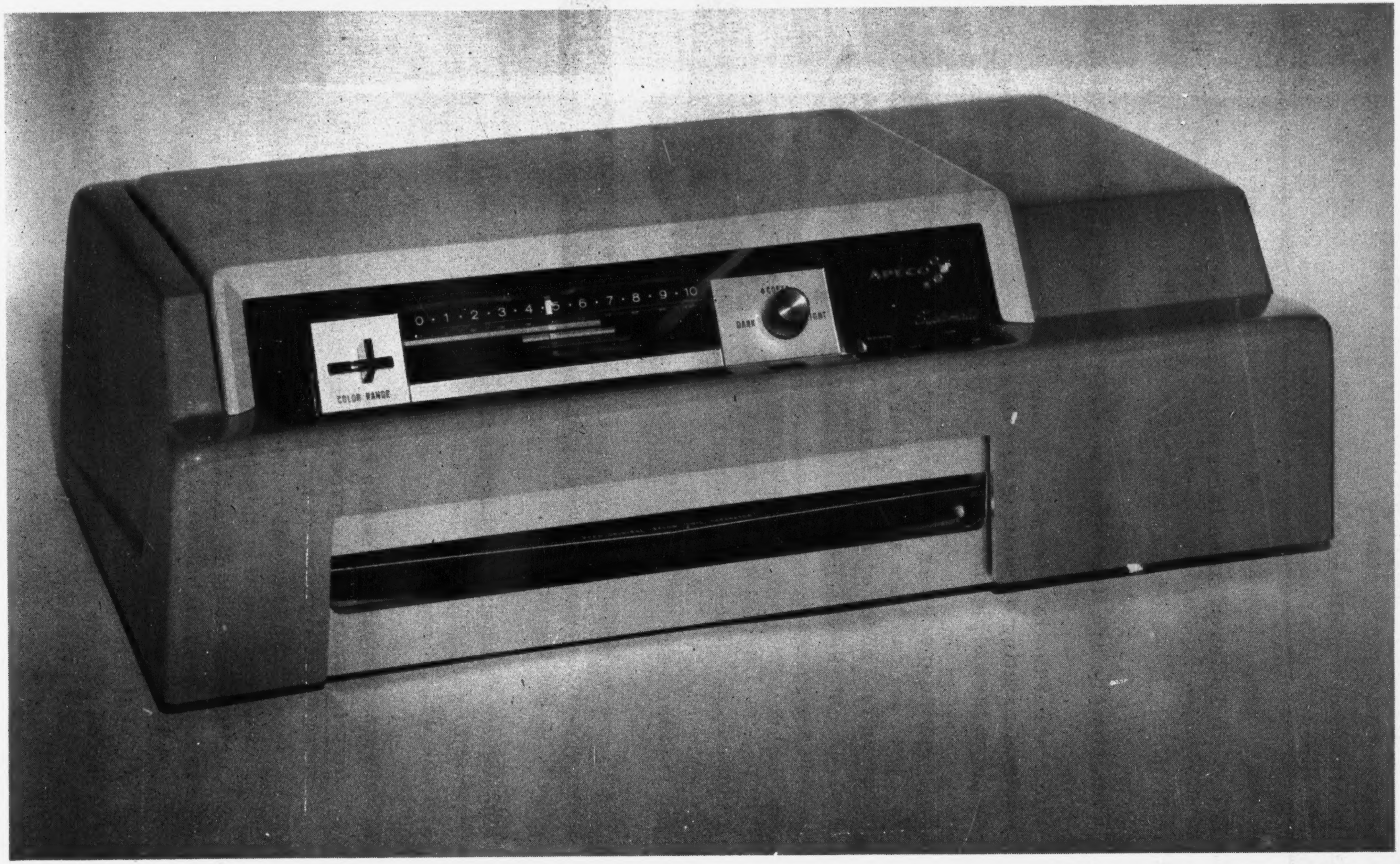
It is also true that if you or I typed a copy of any paper, we could not copy the signature, and the signature is often the most important thing to copy.

ASSIGNMENT:

1. What are the two kinds of photocopying machines?
2. Do all machines make copies equally clearly?
3. What does a photocopier do that is different from any other machine?
4. Would there ever be a letter with handwriting, typing, and colored-pencil writing all on the same page?
5. If so, is there a machine that will take a clear picture of all those things?
6. What is the most important part of any letter that we might be asked to duplicate?

VOCABULARY:

equally	ē´ kwəl ĭ	in the same amount; so as to be equal
extremely	ĕks trēm´ lĭ	much more than usual, very
immediately	ĭ mē´ dĭ ĭt lĭ	now, at once
Kodak	kō´ dăk	short way of saying "Eastman Kodak Company"; this company makes cameras and many other machines. A certain type of camera is called a Kodak
photo	fō´ tō	short for "photograph"
photocopy	fō´ tō kŏ pĭ	a picture of typed, written, or drawn material
photocopier	fō´ tō kŏ´ pĭ ər	machine that duplicates material by using light
photograph	fō´ tō grăf	a picture made with a camera
notation	nō tā´ shŭn	a mark, or word, or phrase, or initials (something short) written down


APECO
0 · 1 · 2 · 3 · 4 · 5 · 6 · 7 · 8 · 9 · 10
COLOR RANGE
DARK
LIGHT

APECO WET PHOTOCOPIER AMERICAN PHOTOCOPY EQUIPMENT COMPANY

UNIT VI - PHOTOCOPYING MACHINES

General Information on Different Types of Copying Machines

Lesson 2

OBJECTIVE: To learn some facts about photocopiers.

INFORMATION:

1. Photocopiers are used when we need an exact copy of a paper.

   Think about the last lesson. What kinds of printing or writing can this machine take a picture of?

   The copying machines are fast, too. You see, we can take a picture of a letter on one sheet of paper faster than anyone could type it.

2. Some machines have to use a very thin paper, like onionskin, to get a picture on. These thin papers are very hard to file. They tear and wrinkle very easy.

3. The Kodak Verifax machine uses a paper which is heavier, like typing paper, to get the picture on.

VERIFAX SIGNET COPIER

4. The Verifax and some other machines make use of the contact method to get the pictures. Let's talk about the contact method and see what it means.

   a. First, the paper used is heavy and shiny. It is called matrix paper. This paper is sensitive to light. That means that light must not get on the paper or it will turn a dark color and will not be good to use in the machine. You will notice that this paper has a very heavy shiny coating on one side; it is this side that must not be exposed to the light, if we are to be able to use it to get a good picture.

      We keep the matrix paper in a covered box which is black inside to keep the light away from it. Electric lights do not harm the paper, but any natural light does harm it.

We must close the curtains to keep out the outside light, but may leave on the electric lights when we use the machine.

When we need to refill the empty box of matrix paper, it is best to take it into the closet and refill it there, if possible.

b. What does "contact" mean?

Two things that are in contact are touching each other. This is called the contact method because, first, we put the original sheet over the matrix paper, and the two sheets are touching each other. Then we put the matrix into the activator. When we pull the matrix out, a sheet of copy paper is pressed tightly against it.

Think about it.

(1) First there is contact between the original and the matrix, and the matrix gets a picture of whatever is on the original.

(2) Then there is contact between the matrix and the copy paper. This time the copy paper getsa picture of what is on the matrix.

This final copy is possible because the papers have contacted each other.

c. There is another way of making pictures of papers. This is called microfilm. The picture is put on a film, like the film in a camera. Then the film is run through a projector, very much like what we show pictures with. This method is used mostly by businesses like banks. The film takes little room and so is easy to store.

d. Some machines do not use any liquid in the process. They are called dry machines. Some are small enough to put on a desk top, and others are as large as a desk.

ASSIGNMENT:

1. What is the name of the sensitive paper used in the Verifax machine?

2. What does "sensitive" mean?

3. When we are thinking of matrix paper, "sensitive" means that it cannot have any ______________________ on it.

4. Does the light from electric lights harm the matrix paper?

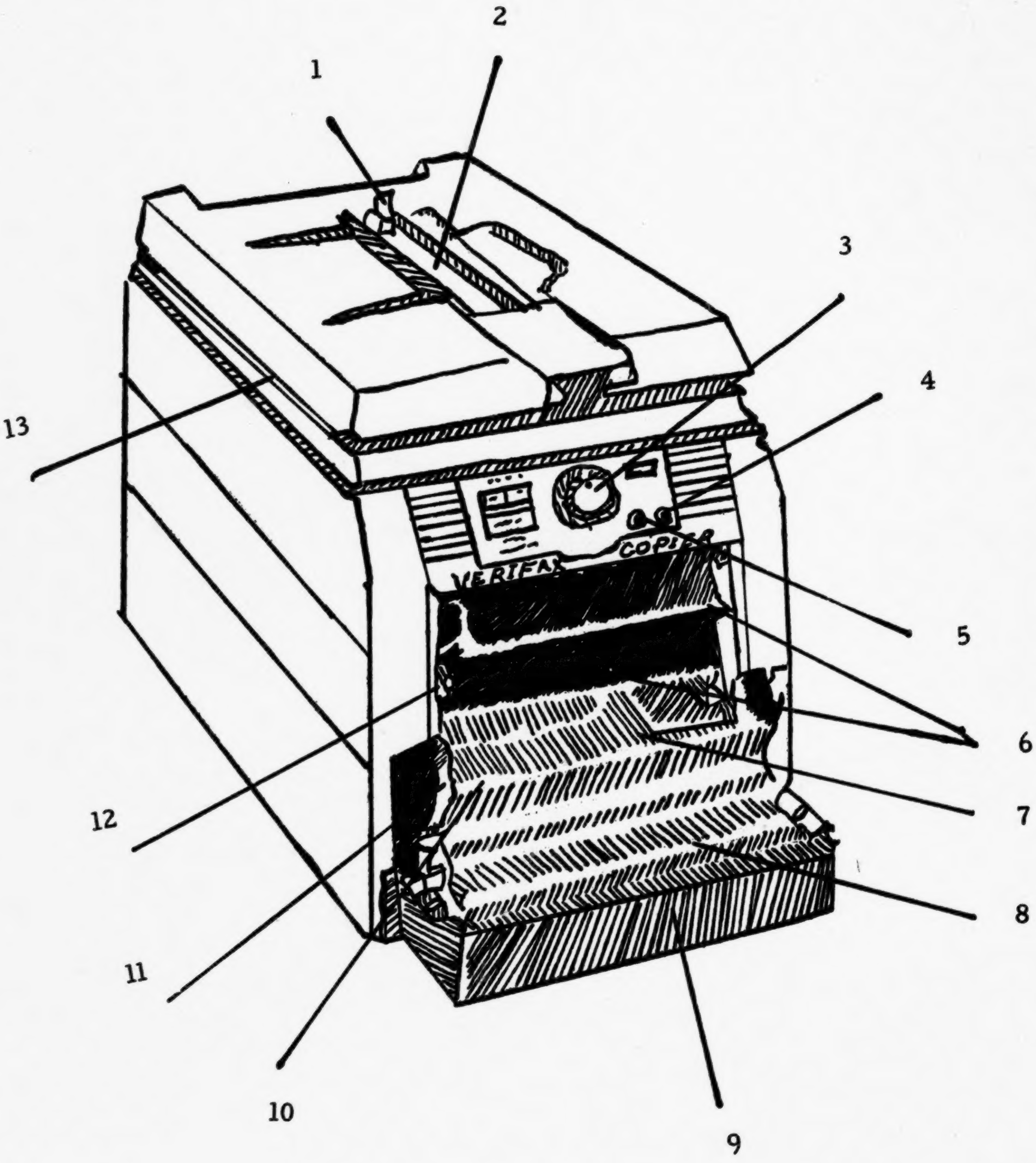
5. What does "contact" mean?

6. What is the name of the photocopier made by the Eastman Kodak Co.?

7. What method of copying does it use?

VOCABULARY:

activator	-	ăk′ tĭ vā tər	-	the liquid that brings out the picture (negative) on the matrix
contact (adj.)	-	kŏn′ tăkt	-	touching, pressed together
expose	-	ĕks pōz′	-	uncover, lay open, show openly, allow light to reach
microfilm	-	mī′ krō fĭlm	-	a very small film
natural	-	năt′‿u rəl	-	made by nature, not by man
projector	-	prə jĕk′ tər	-	a machine for putting a picture on a screen so that many people may see it at the same time
sensitive	-	sĕn′ sĭ tĭv	-	feeling something quickly; easily hurt by something


1
2
3
4
5
6
7
8
9
10
11
12
13
VERIFAX
COPIER

VERIFAX LEGAL-SIZE WET COPIER

Eastman Kodak Company

UNIT VI - PHOTOCOPYING MACHINES

Verifax Legal-Size Copier -
Names and Use of Parts **Lesson 3**

OBJECTIVE: To learn the names and use of the different parts of the Verifax photocopier.

INFORMATION:

From the illustration on the opposite page, read the name: "Verifax Legal-Size Wet Copier." Verifax is the name of this machine.

Let us go over the names of the parts and talk about their use.

1. Trimmer head. -- On the top of this machine is a small handle with a sharp blade in it. This handle is the trimmer head, and it runs in a track.

2. Trimmer guide. -- This is the track that the sharp blade will run in. It will trim the paper you have just finished copying on. It will cut according to how far you push the paper in the guide.

3. Timer dial. -- This sets the time that the lights in the machine will shine on the paper. This is set for the length of time that is needed for the exposure.

4. Activator timer button. -- With this we can get the correct amount of time for the paper to be in the liquid activator.

5. Exposure button. -- When this button is pressed, the lights are turned on (for as long a time as the timer dial is set for) and the matrix is exposed to the original sheet.

6. Matrix trays. -- This is where the matrix paper is kept. The light cannot get to it, and it will not be spoiled. There are two trays for different-sized matrix papers.

7. Copy paper tray. -- Any size paper up to $8\frac{1}{2}$" x 16" long can be kept on this tray. It is always there ready to be used.

8. Pressure roller. -- This is pushed down to rest on the papers as they are pulled from the activator. It helps to dry the paper.

9. Activator tray. -- The liquid which is made and used for getting the picture, is kept in this tray. It is almost like a drawer.

10. Pressure bar. -- This is pushed down on the roller before the papers are withdrawn from the liquid activator.

11. Pressure bar handle. -- Used to push down the pressure bar.

12. Paper feeder knob. -- Used to get the copy paper out.

13. Exposure unit. -- Where the matrix and the original are put for the light to shine on them.

ASSIGNMENT:

1. What is the activator?

2. How do we get the liquid activator?

3. Do we need to turn our light off when we use this machine?

4. Name the steps to take in getting a copy of a letter.

VOCABULARY:

expensive - ĕks pĕn′ sĭv - costs a lot (usually means money)

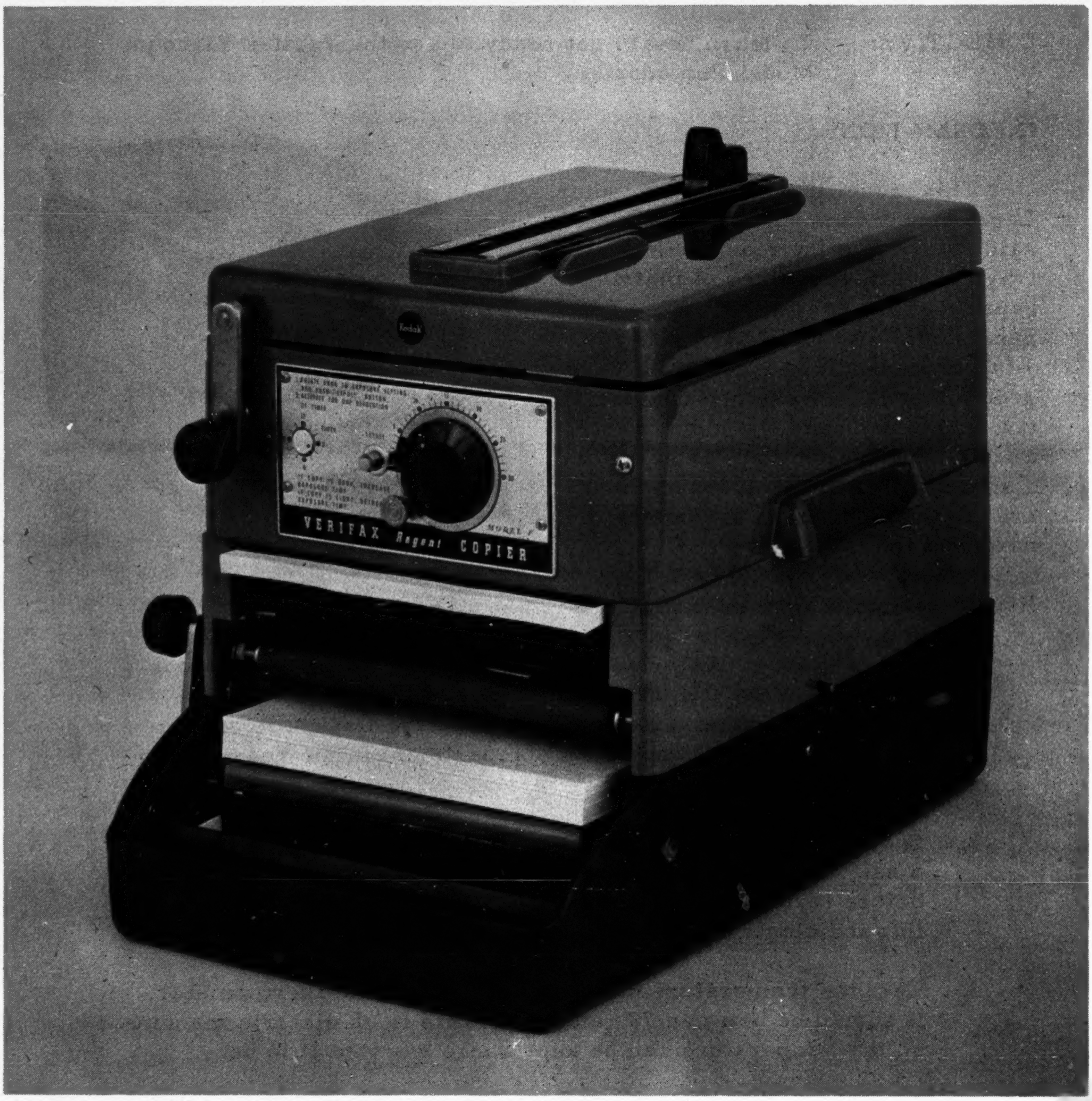
exposure - ĕks pō′ zhər - being open to the light; being shone on by light

pressure - prĕsh′ ər - continued pushing, pressing

timer - tīm′ ər - a small controlling machine that can be set for a certain amount of time

trimmer - trĭm′ ər - a knife that cuts off small amounts from around the edges

VERIFAX REGENT WET COPIER


Kodak
VERIFAX Regent COPIER

EASTMAN KODAK CO.

Verifax Legal-Sized Wet Model - How To Get Ready To Use It

Lesson 4

OBJECTIVE: To learn how to get ready to use the Verifax Viscount Model Photocopier.

INFORMATION:

This model is a legal-size copier. Legal size means $8\frac{1}{2}$" by 13". We said before that the machine has two trays for different sizes of matrix paper and one box for any size copy paper from 6 to 9 inches wide by 10 to 17 inches long. This is a very good feature, because one can use the size paper needed and not waste a large sheet when there is need for a smaller sheet. We learned about the trimmer. It is a very useful part, needed often.

How to get ready to use the machine

1. Mix the dry activator with water according to the directions on the box; fill the tray with the mixed liquid activator. Make a second mixture of activator in the flat bottle and place it, mouth down, in the compartment in the rear of the machine.

2. Set the thermostat at the "4" position and wait for at least a half day for the activator to get to the right temperature before trying to use the machine. Be sure it is plugged into the electric socket.

3. Test the temperature of the activator with the thermometer. It should be between 79° anf 81°. This is an electric machine, so the temperature can be kept where we want it to be.

4. Load the trays with the sizes of paper that you expect will be needed. The matrix paper must be put in a tray with a cover over it. Be sure the shiny, coated side is up when loading. The uncoated ends may protrude, making it much easier to pull out the matrix. The tray for the copy paper has no cover.

It does not need one. Be sure the copy paper is inserted with the correct side of the paper up. You will find an arrow on the package, telling you which side is to be up.

5. Close the curtains at the window while you leave the thermometer in the activator (fluid). If the temperature is between 79° and 81°, it is ready to use. We are now ready to get the picture.

6. Look at the size of the original, then decide what size matrix paper will be needed. Is the original black printing on white paper? Is it a letter with dark typing and light handwriting on it? Does it have any colored pencil notations on it? After thinking about all these things, decide how long the paper with the matrix must be exposed to the light in the machine. Now you may set the timer dial to the amount of time you think will be needed. If it is an ordinary typedletter, with a dark signature, set it at 10. That is the normal setting.

7. Turn the knob timer dial until the white dot is at 10. You are ready to take the picture.

ASSIGNMENT:

1. What is the name of the liquid that is put in the tray at the bottom of the machine?

2. What is the purpose of this tray?

3. Why is the second bottle of liquid activator placed in the rear of the machine?

4. What are the first two things to do in preparation for using the machine?

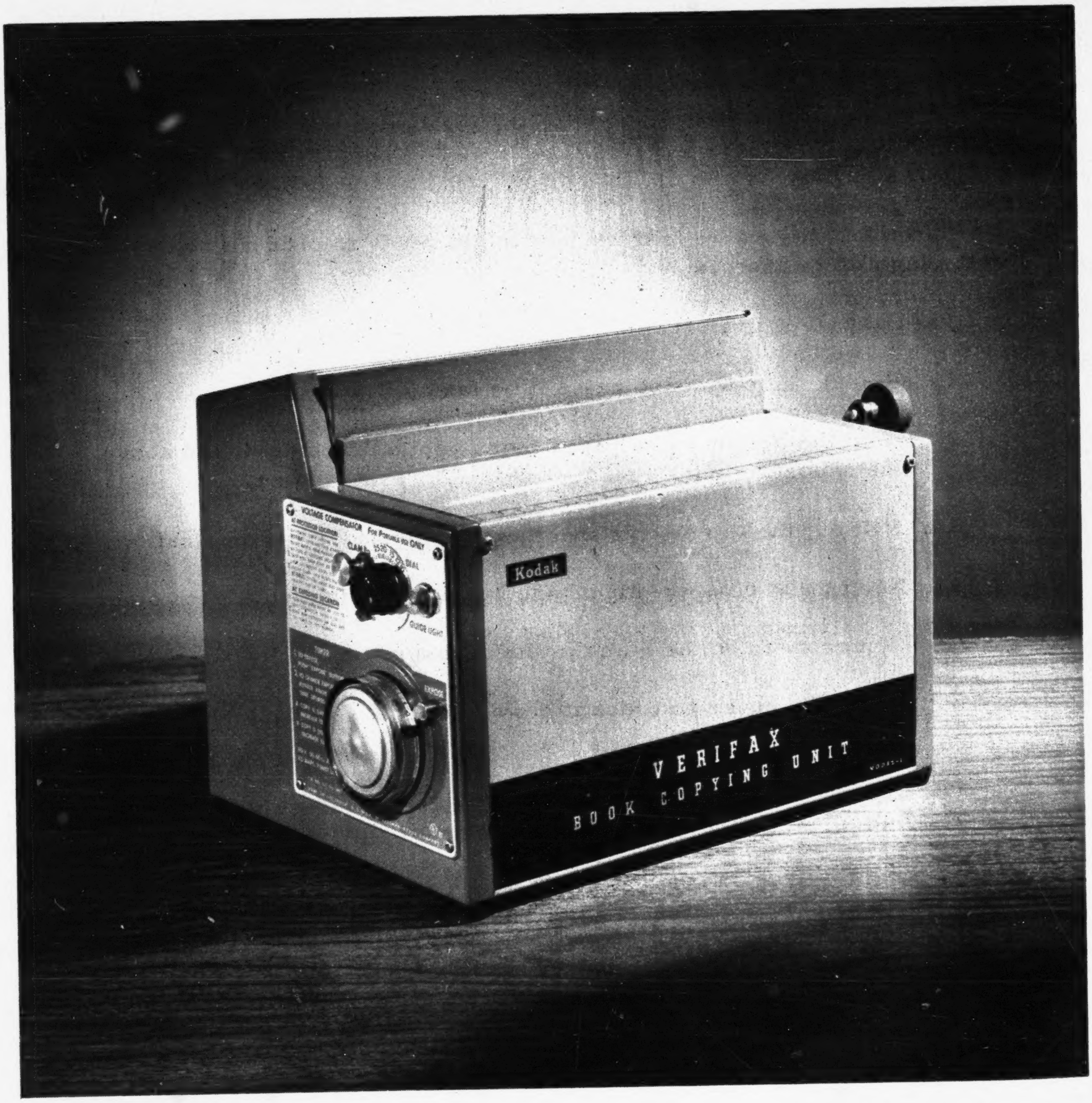
5. Why do the matrix trays have covers on them?

6. Can you think why the machine has two trays for matrix paper, but only one for the copy paper?

VOCABULARY:

legal	-	lē′ gəl	-	according to law; legal-size paper is the size used for most very important writings; it may be used for other things too
ordinary	-	ôr′ dĭ nĕ rĭ	-	usual, regular, customary
protrude	-	prō trōōd′	-	stick out
socket	-	sŏk′ ĭt	-	an empty little place into which something fits
viscount	-	vī′ count	-	a nobleman (in countries that have kings and princes). Also, the name of a large-size model of the Verifax machine

VERIFAX BOOK COPYING UNIT


Kodak
VERIFAX
BOOK COPYING UNIT
VOLTAGE COMPENSATOR
GUIDE LIGHT
EXPOSE

EASTMAN KODAK CO.

Verifax Legal-Size Wet Model - How To Use It

OBJECTIVE: To learn how to use the legal-size wet Verifax.

INFORMATION:

In the last lesson we learned how to get ready to produce copies on the legal-size photocopier.

The next steps are:

1. Unlock the cover and raise it as far as it will go.
2. Hold the original (the paper being copied) face down and above the exposure unit.
3. Pull out the top matrix sheet, sliding it under the original.
4. Keep the two papers tight together and straight with each other.
5. Center them on the glass in the exposure unit.
6. Close the cover and lock it down as quickly as possible. Do not slam it down.
7. (You have already set the timer dial.) Now push in the exposure button. The red dial above will become lighted.
8. Wait until the timer has turned back to the lowest setting. The exposure button will become dark.
9. (Work fast but not so fast as to become clumsy.) Open the cover. Leave the original on the glass. Take the matrix from under the original and immediately place it in the activator, shiny side up.
10. To do this, you must place the first three fingers of your right hand under the uncoated end of the paper and, with the thumb on top, hold the paper in almost a V-shape between the three fingers and the thumb.

11. Insert the matrix into the activator tray by holding it cornerwise to the tray, and slipping the right corner into the liquid, then quickly turning it to get the left corner in; gently push it, getting it straight into the activator. Make sure that the glossy (shiny) side is covered with liquid.

12. Immediately push the activator button. The dial above will become lighted.

13. While the matrix is being activated and you are still holding it with your right fingers and thumb, pull the paper feeder knob towards you and back again, to feed the copy paper forward.

14. Line up the ends of the two sheets together. Be sure they are straight with each other.

15. When the activator button becomes darkened, lower the pressure roller, then release it. Do not hold it down.

16. Pull the two papers with a firm, steady, horizontal motion and immediately pull them apart from each other.

17. The copy paper should have an exact copy of the original on it.

18. The copy will be damp; lay it on a table to dry. Trim the paper to size with the trimmer or a paper cutter.

19. If more than one copy is needed, immediately after separating, reinsert the matrix into the activator and follow Steps 13, 14, and 16.

20. You should be able to get from 1 to 6 copies from one matrix.

21. When the work is complete, wipe the machine dry and clean, and cover it. Open the curtains.

22. Trim the copies with trimmer or paper cutter, or not, as is needed. Two-sided Verifax copies can be made by placing the copies back in the copy-paper tray. Proceed in the normal way. Have the printed side up. Be sure the top of paper is cut if cutting is needed.

23. When the activator solution is worn out, empty the processor tray, clean it, and fill with a newly made solution.

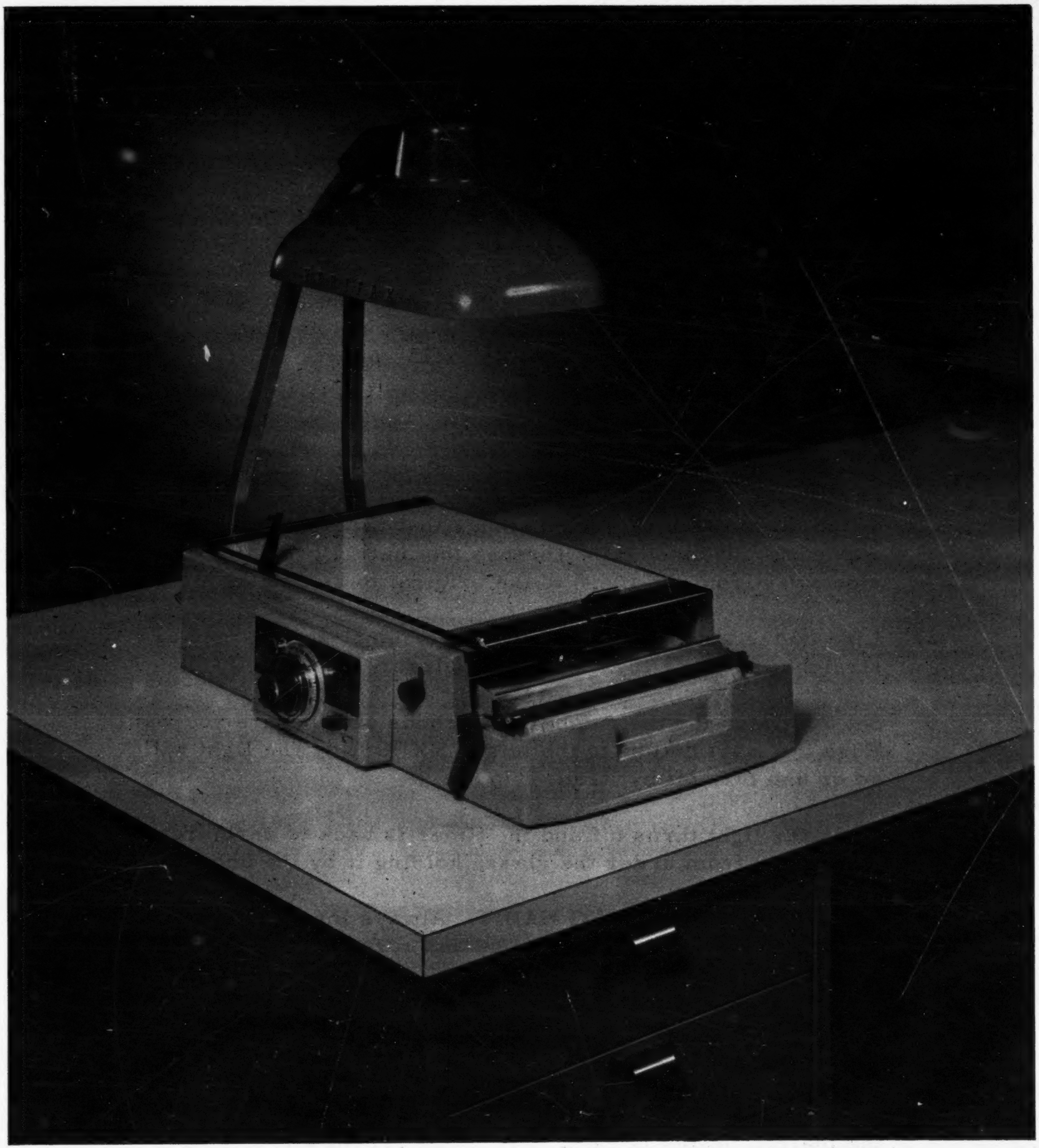
ASSIGNMENT:

1. **How does the activator stay at the right temperature?**
2. **Why do we close the curtains?**
3. **What are the three main steps inphotocopying?**
4. **There are two ways we can remember to put the matrix paper in the exposure unit. What are they?**
5. **How do we use our fingers to get the matrix into the activator?**

VOCABULARY:

activate	**ăk′ tĭ vāt**	**make active or useful**
clumsy	**klŭm′ zĭ**	**having no skill, not graceful**
horizontal	**hôr ĭ zŏn′ təl**	**across, from one side to the other**

VERIFAX SIGNET WET COPIER



EASTMAN KODAK CO.

UNIT VI - PHOTOCOPYING MACHINES

Verifax Signet Wet Copier - How To Use It — Lesson 6

OBJECTIVE: To learn how to use the Signet Verifax.

INFORMATION:

A. Mix the activator and prepare the machine for use. Do this by following the directions in Lesson 4.

In this model of the Verifax photocopier, only one side of matrix and copy paper can be used. Fill the matrix box and the copy-paper container with either 8½" x 11" or 8½" x 13" paper.

B. How to use the small Signet verifax.

1. Feed the matrix out of the box and place the shiny side down on the face of the paper to be copied. (This is the opposite of the large machine.) Remember that the light from the exposure unit must shine through the matrix (with the shiny side away from the light) to the original to be copied.
2. Line up the sides of the matrix and original so that they are straight and place them under the glass.
3. Set the timer for the number of seconds of exposure you want. Push the start button to the left to EXPOSE. The light will go on and turn off by itself.
4. When the light turns off and the timer is back to zero, remove the matrix from under the glass, holding it by the uncoated end.
5. FORM THE FOLLOWING HABIT: Always insert the matrix in the processor (activator tray) by one corner first, then straighten it, and slide the matrix straight in. Be sure the matrix has gone in the processor coated side up. Immediately push the start button to the right to ACTIVATE.
6. When the timer stops, turn the paper feed knob until one sheet of copy paper is far enough out to be held even with the end of the matrix, which is being held in the processor.

7. Holding the ends of the matrix and copy paper together, press the squeegee handle down and hold it while you pull the two papers out of the activator. However, do not hold it down too hard; if you see a wrinkle appearing, lift up on the squeegee handle until the paper straightens out.

8. Separate copy paper from the matrix quickly.

9. To make more copies, return matrix to the solution and repeat Steps 7 and 8.

10. Trim off the edges of the copy.

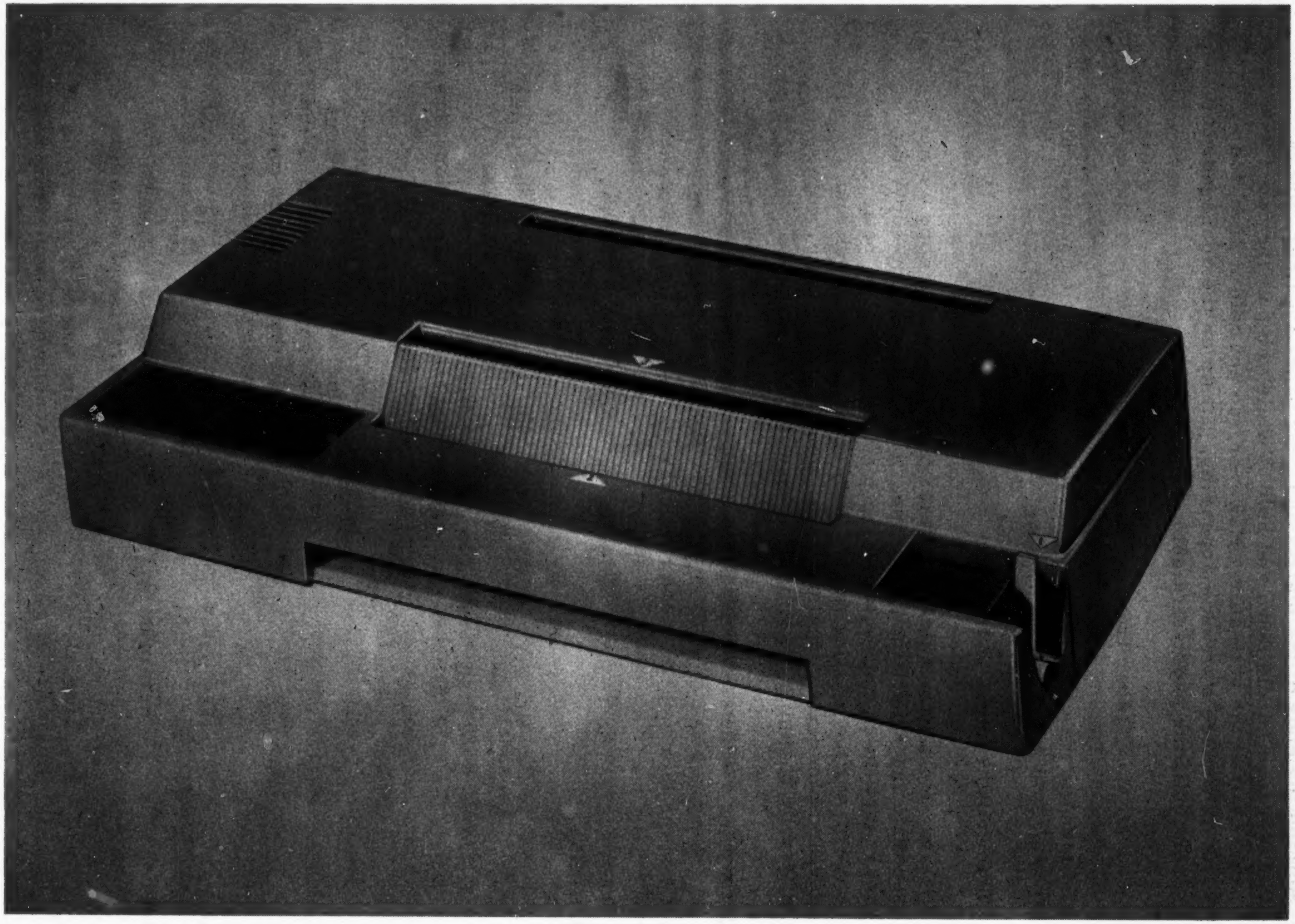
11. NOTE: Work very quickly, but learn to look at the copy as you separate the sheets the first time. If it is not a good copy, do not insert the matrix again. The picture will not be better, and you will be wasting paper. You must learn to look and decide immediately whether or not you can get a better copy either by changing the timing or by working faster.

ASSIGNMENT:

Review steps thoroughly. Get practical experience using the Signet copier.

VOCABULARY:

matrices	- mā′ trĭ sēz	- plural of matrix (sometimes you may see "matrixes")
regular	- rĕg′ ū lər	- usual, customary, done this way most of the time
solution	- sə lo͞o′ shŭn	- something fully mixed with a liquid; when thinking about copying machines, it is the liquid that we use to make the pictures develop (show up)
temperature	- tĕm′ pər ĭ chər	- how cold a thing is, or how warm
thermometer	- thẽr mŏm′ ĕ tər	- what we use to find the temperature of something
wrinkle	- rĭng′ kl	- a line where there should be none; where something has been pulled together and is not smooth



APECO WET COPIER AMERICAN PHOTOCOPY EQUIPMENT COMPANY

UNIT VI - PHOTOCOPYING MACHINES

Wet Machines - General Information Lesson 7

OBJECTIVE: To learn general good practices in using wet machines.

INFORMATION:

A. How to set timer to get copies that are not too light or too dark.

1.	Normal originals-- White paper or very light yellow paper with black or dark blue printing	Normal setting
2.	Weak originals-- White paper with light typing, weak black or red pencil writing	Normal setting minus 1 to 3 seconds
3.	Carbon copies-- White onionskin with dark, clear typing	Normal setting plus 1 to 3 seconds
	Yellow onionskin with dark, clear typing	Normal setting x 2
4.	Carbon copies-- White or yellow onionskin with fuzzy, not clear typing (Place matrix on pad with coated side up, and original on top, facing down.)	$\frac{1}{2}$ Normal setting
5.	Colored paper (except yellow) The darker paper colors need the longer exposures.	Normal setting plus 2 to 5 seconds

REMEMBER:
If the copy is too dark or the letters are filled in, use a longer exposure time.
If the copy is too light or the letters are weak and broken, use a shorter exposure time.

B. Suggestions for filling the processing tray.

1. When filling the processing trays, it is always wise to use a funnel. Try to keep from spilling the liquid anywhere. It is very strong and will take the color out of any paint that it touches.

2. Sometimes the processing trays in the smaller machines can be lifted and carried, slightly slanted, so they will not spill, to a sink, where they can be emptied and rinsed out. Return the processing tray to its proper place in the machine before refilling.

3. The legal-size machine also has a tray, but it is too big and heavy to carry. Do not try to carry it when filled. Instead, use one of the large, soft plastic bottles and the siphon hose with a clip on one end. Clip that end in the tray, and the other, cork-like end in the bottle. Hold the bottle up, squeeze it, and gently set it down on the floor as you carefully take your hands away; the liquid will run out of tray into the bottle.

   When the tray is empty you may take it to a sink, wash it, and dry it. It is now ready to be refilled.

   Trays need to be washed only about once in six months.

ASSIGNMENT:

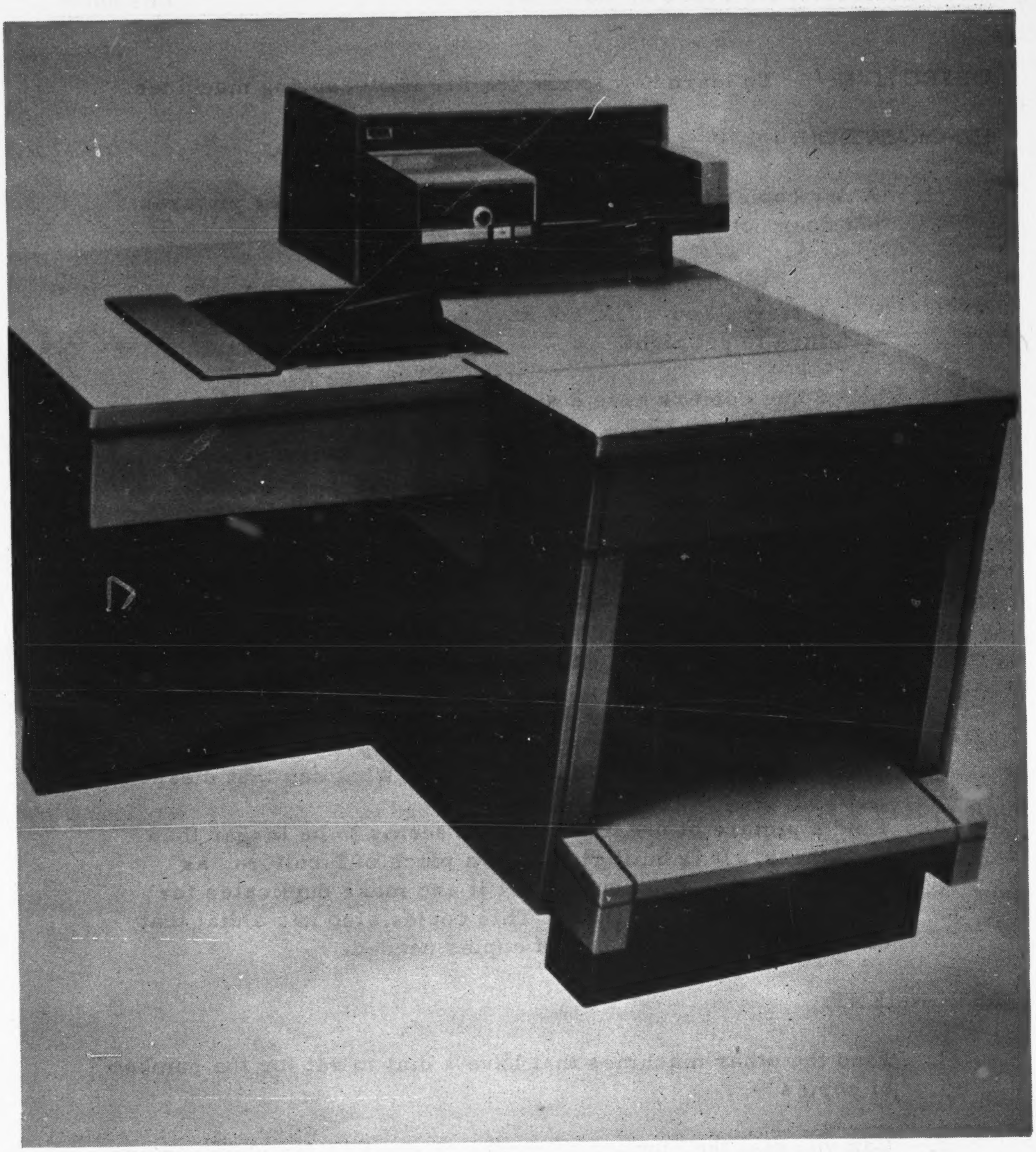
Practice in figuring out the correct timing for different samples of work.

The second part of this lesson will be given when a machine needs to be emptied. The students should take part in the procedure.

VOCABULARY:

siphon	-	sī′fŏn	-	a bent tube used to carry liquid up and out over the top edge of a container

XEROX DRY COPIER



EASTMAN KODAK CO.

UNIT VI - PHOTOCOPYING MACHINES

Dry Photocopiers - Types of Machines Lesson 8

OBJECTIVE: To learn how to use the dry photocopying machines.

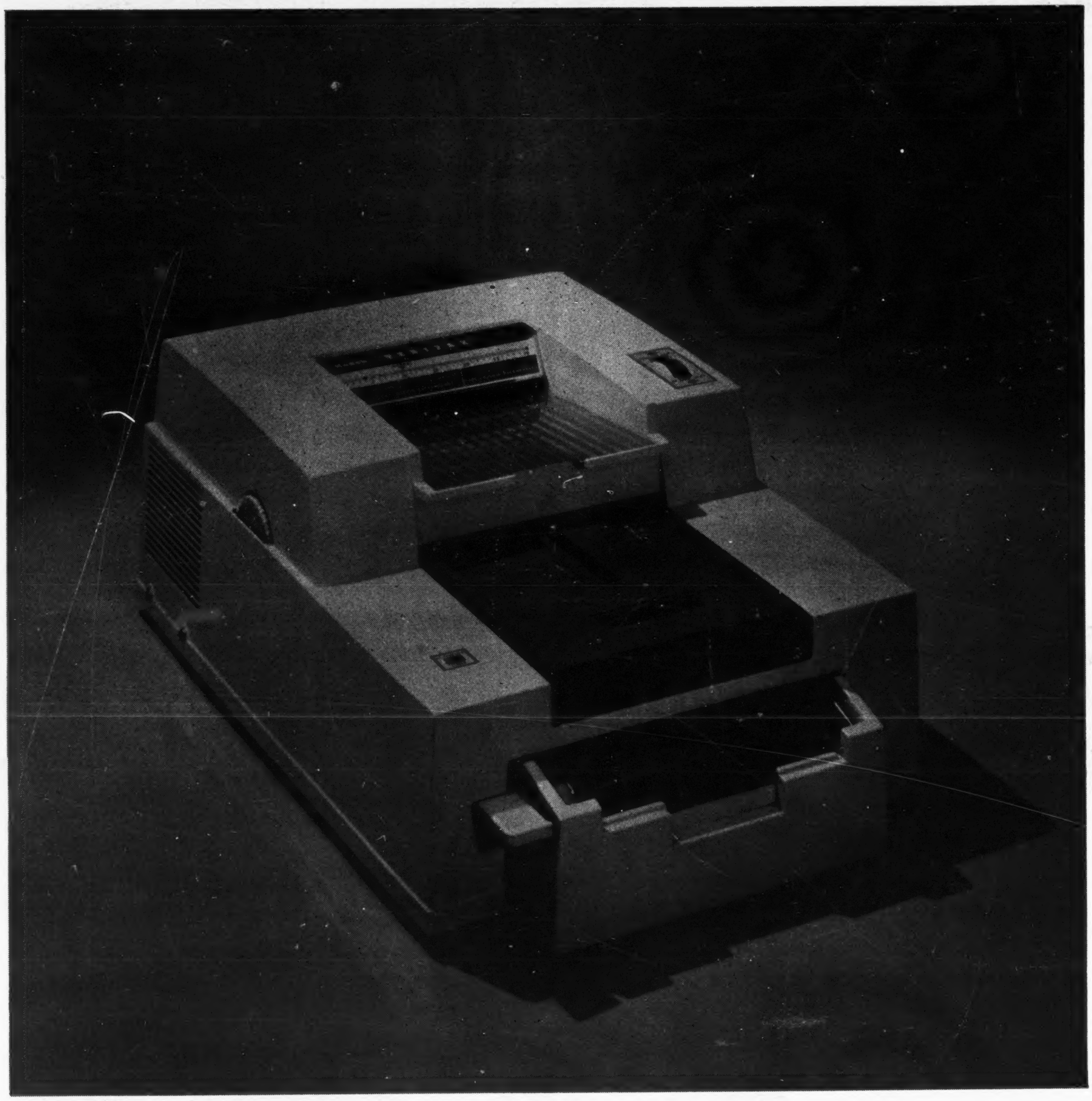
INFORMATION:

1. A dry copier is a photocopying machine that takes pictures, but does not use any liquid in the machines.
    a. You would not have to mix any solution to pour into a tray. You would not have to wait for the temperature to get right.
    b. Some copiers have a dial to set for lighter or darker copies.
    c. Some have a dial you may set for the number of copies that you want from one original; then that number will automatically come out printed.
2. Some dry machines, also some wet ones, can get copies from books as well as from one sheet of paper. These are flexible machines. Almost any thickness of copy can be used.
3. Find the picture of the "Apeco Dial-a-Copy" machine. Think about the name "Dial-a-Copy." What can that mean?
4. Find a picture of one machine that seems to be larger than the others. It is built right into a piece of furniture, as big as a desk. You could sit at it and make duplicates for several hours at one time. This copier also has a dial that can be set for the number of copies needed.

ASSIGNMENT:

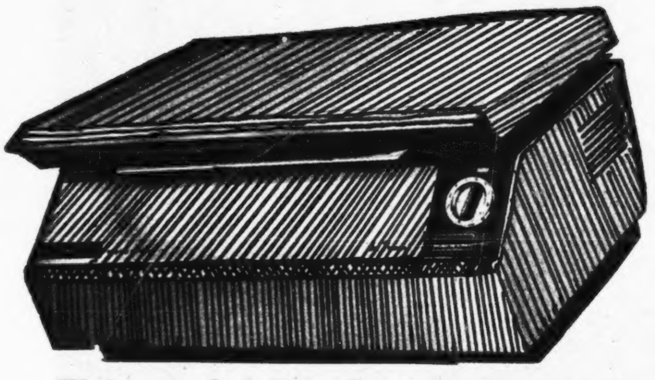
1. Find the other machines that have a dial to set for the number of copies.
2. Can you dial the number of copies on the Verifax photocopying machines?

VERIFAX CAVALCADE WET COPIER



EASTMAN KODAK CO.

3M Standard Dry Copier
Minnesota Mining and
Manufacturing Company



Thermo-fax Dry Copier

SCM Wedgelite Book Copier
Smith Corona Marchant, Inc.

3. Can all dry photocopying machines take a picture from a book?

4. Can all wet machines take a picture from a book?

5. Which one of our machines can take a picture from a book?

VOCABULARY:

Apeco	-	ä pē′ kō	-	name of a wet photocopying machine
Copease	-	kō′ pēz	-	name of a wet photocopying machine
Xerox	-	zēr′ ŏks	-	name of a dry photocopying machine

UNIT VI - ACHIEVEMENT TEST

1. When is it necessary to use a photocopying machine?

2. What is the name of the method that the Verifax uses?

3. What is microfilm and when is it used?

4. How many copies should you be able to make from one matrix on the Verifax?

5. Will this machine copy only things that have been typed?

6. What does each of these words mean:

   matrix
   copy paper
   activator
   processor
   exposure unit
   timer

7. When you are making a copy on the Verifax, is it all right to stop and rest between each step of the work?

8. What exposure setting do you use to make a copy of:

   a. a letter on white paper with clear black or blue handwritten signature?
   b. a carbon copy of a letter on white onionskin with light printing?

9. What can the large Verifax do that the small machine cannot do?

10. Some copies need 10 seconds' exposure time, other papers need 5 seconds, and some need 15 seconds. How do you decide on the exposure time? Why must we be careful about the exposure time?

11. This is a THINK question; perhaps this has never been discussed: Does the matrix get the same amount of time in the processor for activating, no matter what the picture is like? Do we use different amounts of time in the activator for different originals?

12. This is another THINK question:
    What do you think are two very important things to remember about using a photocopier?

13. What is the largest photocopying machine that you know about?

14. What are the steps for using a dry photocopier?

15. What is a rule to follow:

    a. when you get a picture that is too dark?

    b. when you get a picture that is too light?

16. Can any photocopy machine take a picture of anything thicker than a sheet of paper?

    What is it that some can do with a great thickness of paper, like a book?

1. Look at the pictures carefully on pages 1, 2, 3, and 4 of the booklet called Instructions.

2. If necessary, mix activator and fill processor. Be sure this is done a couple of hours before you are ready to use the machine.

3. Problems

   There are eight problems. Make as many copies each time as you can. Be sure to look in your notebook and in the Verifax Guide for the correct exposure setting. Do this before you start to do the problem.

   Problem 1--letter with black printing on white paper

   Problem 2--letter with black printing on white paper with light ball-point signature

   Problem 3--chart with black printing on white paper

   Problem 4--application (both sides) with black printing on white paper

   Problem 5--carbon copy with clear, dark printing on white onionskin

   Problem 6--carbon copy on pink onionskin

   Problem 7--list on yellow paper with black printing

   Problem 8--business form on colored paper with blue ball-point and pencil writing

4. Test

   Make as many copies of each of these as you can:

   a. Letter
   b. Application (both sides). Staple together.
   c. Carbon copy on yellow onionskin

UNIT VII - ADDING MACHINES

Full-Keyboard Machine--General Information Lesson 1

OBJECTIVE: To learn what the full-keyboard machine does and why it has this name.

INFORMATION:

A. Why are adding and calculating machines used?

1. Companies are so large that machines are needed to help get all the work done.
2. Work must be done faster. Old fashioned pen- and- ink methods are too slow.
3. Machines are more accurate. They do not get sleepy, or tired; they do not slow down.
4. The numbers are written clearly and neatly. It is not hard to read any of them.

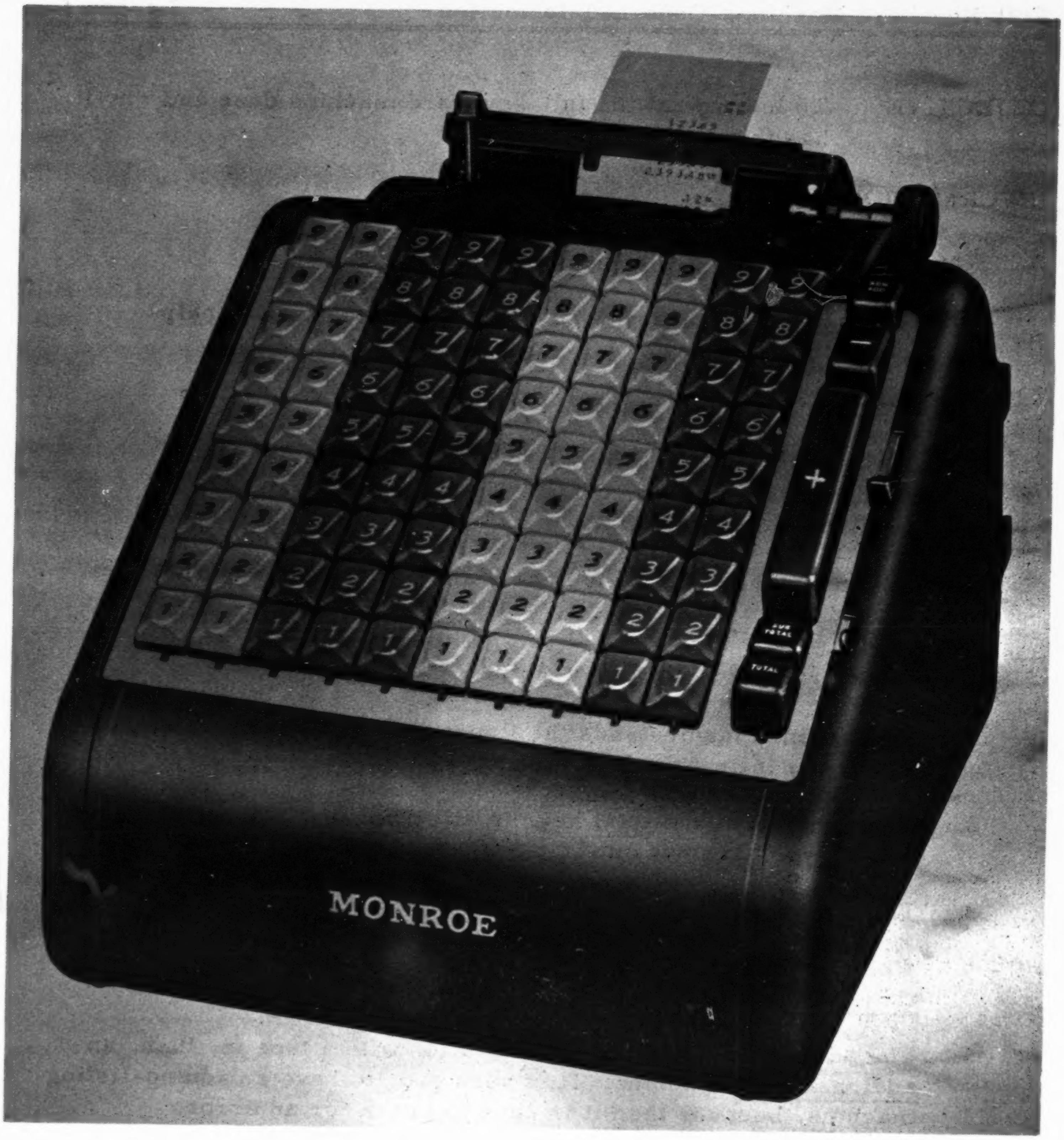
B. Full-keyboard adding-listing machine

1. This adding machine adds the figures you put into the machine and prints them on a tape.
2. When you press the total key, it will print the total of the figures you have put into it.
3. The machine lists the figures in a column on the tape.
4. When a machine adds and prints on a tape it is called a listing machine.
5. The adding machine in the illustration with a tape is, then, an adding-listing machine. It is very good to have an adding-listing machine, because then it is easy to check for an error.

C. Full-keyboard means exactly what it says: The keyboard is full of keys.

1. It has 9 rows or banks of keys.
2. It has either 8 or 10 columns of keys.

MONROE FULL KEYBOARD ADDING MACHINE


MONROE
+
SUB TOTAL
TOTAL

MONROE CALCULATING MACHINE CO., INC.

3. With 10 columns of keys it will add up to 99,999,999.99.

4. If you add 1 more, you would get 10 zeros, because there are not 11 places to read 100,000,000.00.

D. There are other makes of full-keyboard adding machines, but they all work about the same way. If you learn one of them, you will be able to use any of the other kinds. Some makes you might find in an office are:
Allen, Burroughs, Clary, Monroe, Smith-Corona, or Victor.
When you begin to work on a different machine, try it out for a little while and find just how it works. Know your machine.

E. This machine is used mostly for adding, but it will also subtract, and it can multiply by adding over and over.
The numbers are printed on the tape with 2 places pointed off for dollars and cents: $1.00 plus .98 = $1.98.
Sometimes you will add figures that are not money. Then you just ignore the machine's pointing off and use your own.
Example: 9,963.98 + 42.42 = 10,006.40 can be read
996,398 + 4,242 = 1,000,640

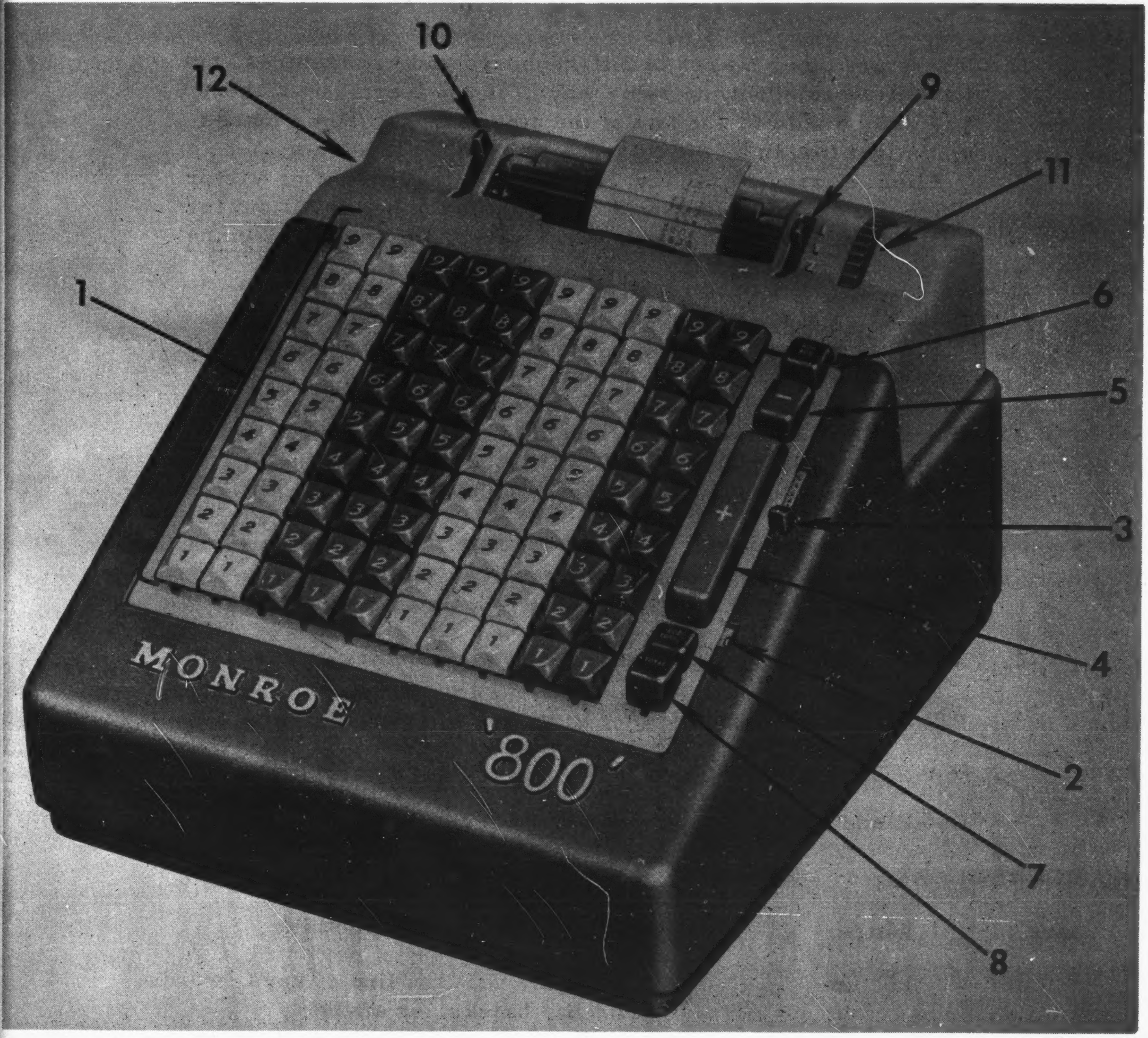
ASSIGNMENT:

1. How do you know that this machine is a listing machine?
2. What kinds of problems can you do on this adding machine?
3. Why is it called a full-keyboard machine?
4. Is it a good thing to have a machine that prints on a tape?
5. Do all adding machines print on a tape?

VOCABULARY:

bank	-	bǎngk	-	a horizontal row of something
column	-	kǒl′ ǔm	-	a straight, vertical line of keys, words, printing, bricks, or anything
ignore	-	ǐg nôr′	-	pay no attention to
list	-	lǐst	-	to write or print a series of words or figures in a vertical line or column
print	-	prǐnt	-	to make numbers, letters, words, etc. with type and ink
tape	-	tāp	-	something long and narrow, usually made of paper or cloth

MONROE "800" FULL KEYBOARD ADDING MACHINE


10
12
9
11
1
6
5
3
4
2
7
8
MONROE
800

MONROE CALCULATING MACHINE CO., INC.

UNIT VII - ADDING MACHINES

Monroe Full-Keyboard Machine -
Parts and Their Use **Lesson 2**

OBJECTIVE: To learn the names of the parts of the Monroe full-keyboard adding machine and how to use them.

INFORMATION:

The parts on the Monroe "800" adding machine are as follows:

1. The keyboard - all the keys with numbers on them.

2. Repeat lever. - Depress this lever for multiplication. What is multiplying? If 6 is multiplied by 5, it means that 6 is added 5 times, doesn't it? So if a machine does not have an X key, the repeat key would be used for multiplying.

3. Error or clear lever. - If you depress a key and then decide it is wrong, push the error key and all the keys will come up.

4. Plus or add bar. - When you want to add a number, for instance 135, depress the correct keys, then push the plus bar. The number 135 is in the machine and will be printed on the tape. There is no symbol on the tape for adding.

5. Minus or subtract bar. - If you want to subtract 35 from the 135, depress the keys for 35, then depress the minus bar. Again the figure will print and your tape will read:
   ```
   135
    35-
   ```

6. Non-add key means do not add. Usually the printed sign or symbol is -//-, but on some machines it is NA. If you had wanted to number the above problem with the number 1, your tape would look like this:
   ```
     1 -//-
   135
    35-
   ```

7. Subtotal key. - This gives the total this far, but it is not the final (last) answer to the problem. Let's take a subtotal on this problem:
   ```
     1 -//-
   135
    35-
   ----
   100 S or ●
   ```

8. Total key. - This gives the final answer. The problem is finished. Let's get a total answer by pushing the total key. Your problem will look like this:

```
   1 -//-
 135
  35-
 ---
 100 S or ●
 100*
```

If you depress the total key again you will get just an *. There is nothing in the machine.

9. Spacing lever. - You can space 1, 2, or 3 rows between the figures, just the same as on a typewriter.

10. Platen release lever. - Sometimes the tape is crooked; you will need to loosen the platen to pull the tape straight.

11. Platen twirler. - Use your thumb and roll the tape up to where you will tear it off.

12. Hinged cover. - Cover comes off for repairs.

ASSIGNMENT:

1. If you depress the wrong keys, what can you do so that they won't be printed?

2. When might you want to print a figure with the non-add key?

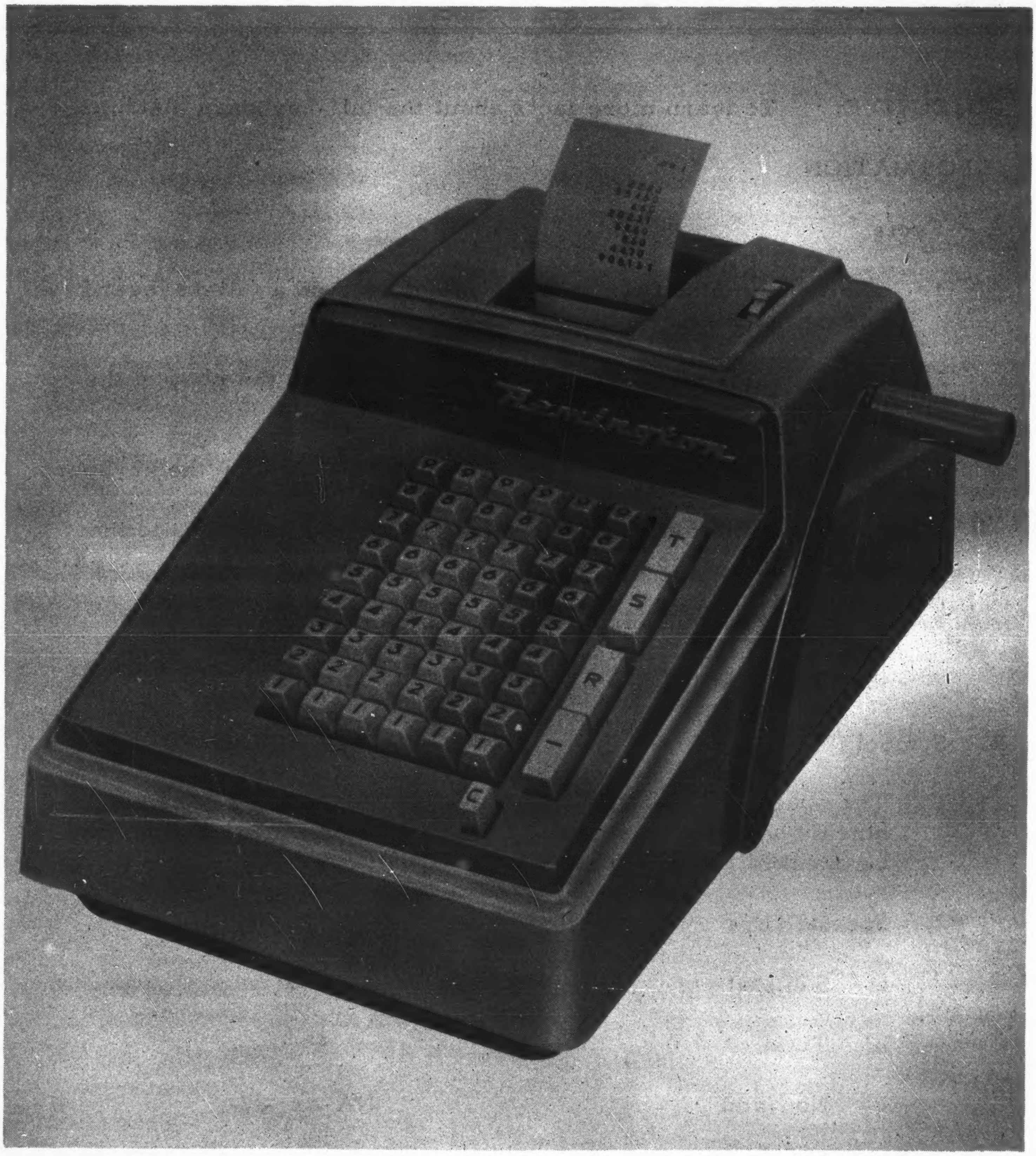
3. Does subtotal mean an answer to only a part of a problem?

4. What is the symbol for addition?

VOCABULARY:

subtotal	-	sŭb′ tō təl	-	the total this far, but more will be added
total	-	tō′ təl	-	whole, entire, all, complete
twirler	-	twẽr′ lər	-	something that moves around very rapidly

REMINGTON FULL KEYBOARD MANUAL ADDING MACHINE



REMINGTON RAND OFFICE MACHINES

UNIT VII - ADDING MACHINES

Full-Keyboard Machine - Facts and Symbols | Lesson 3

OBJECTIVE: To learn more facts about the full-keyboard machine.

INFORMATION:

A. Facts

1. The touch method of operation is not used on a full-keyboard adding machine.

2. The operator must learn to look quickly from the copy to the keyboard.

3. The first and second fingers and thumb are used on the keyboard.

4. The tip of the fourth finger should be used on the keys to the right of the keyboard.

5. A rule for all machines: Always clear the machine first before working. Press total key until no figures print on the tape, just the symbol for total (*).

B. Symbols

1. The operator must know what the symbols mean so she can tell quickly what she has done. This is true whenever a tape must be checked for an error.

2. Special keys

a.	Subtotal	● or S
b.	Total	*
c.	Non-add	NA or -//-
d.	Repeat key	
e.	Minus or subtraction	-
f.	Motor bar (add bar)	
g.	Error or error corrected	E or EC

ASSIGNMENT:

1. Add these on paper; get a subtotal and a total. Add 12 and 13; subtotal; add 14, get total.

2. Give the meaning of the following symbols:

   a. E

   b. -/ /-

   c. ●

   d. NA

   e. - (give two words)

VOCABULARY:

clear	-	klēr	-	remove everything, take out all, leave nothing
check	-	chĕk	-	to prove, make sure a thing is right, prove by comparing work to something else
correct	-	kə rĕkt′	-	true, right
symbol	-	sĭm′ bəl	-	a small mark that means something else: T, -, X, and ÷ are symbols

UNIT VII - ADDING MACHINES

Full-Keyboard Machine - Operation — Lesson 4

OBJECTIVE: To learn how to operate a full-keyboard adding machine.

INFORMATION:

1. Place machine on its table at a slight angle towards the body, where the operator is most comfortable and can work best.
2. Clear the machine by depressing the total key until only the * (total symbol) is printed.
3. Depress the keys you want to put in the machine.
4. Depress the add bar, and the figure will be printed on the tape.
5. Zeros in the center of a figure or on the right side of a figure will print automatically. There is no zero key. Depress nothing in the column that has a zero in it.
6. Use of fingers:
    a. Use first and second fingers when two numbers are no further apart than 1 or 2 numbers. Example: 44, 65, 46.
    b. Try to push 2 or 3 numbers at the same time.
    c. Use thumb and second finger when numbers are not close together. Example: 18, 108.
    d. Use tip of little finger on motor bar.

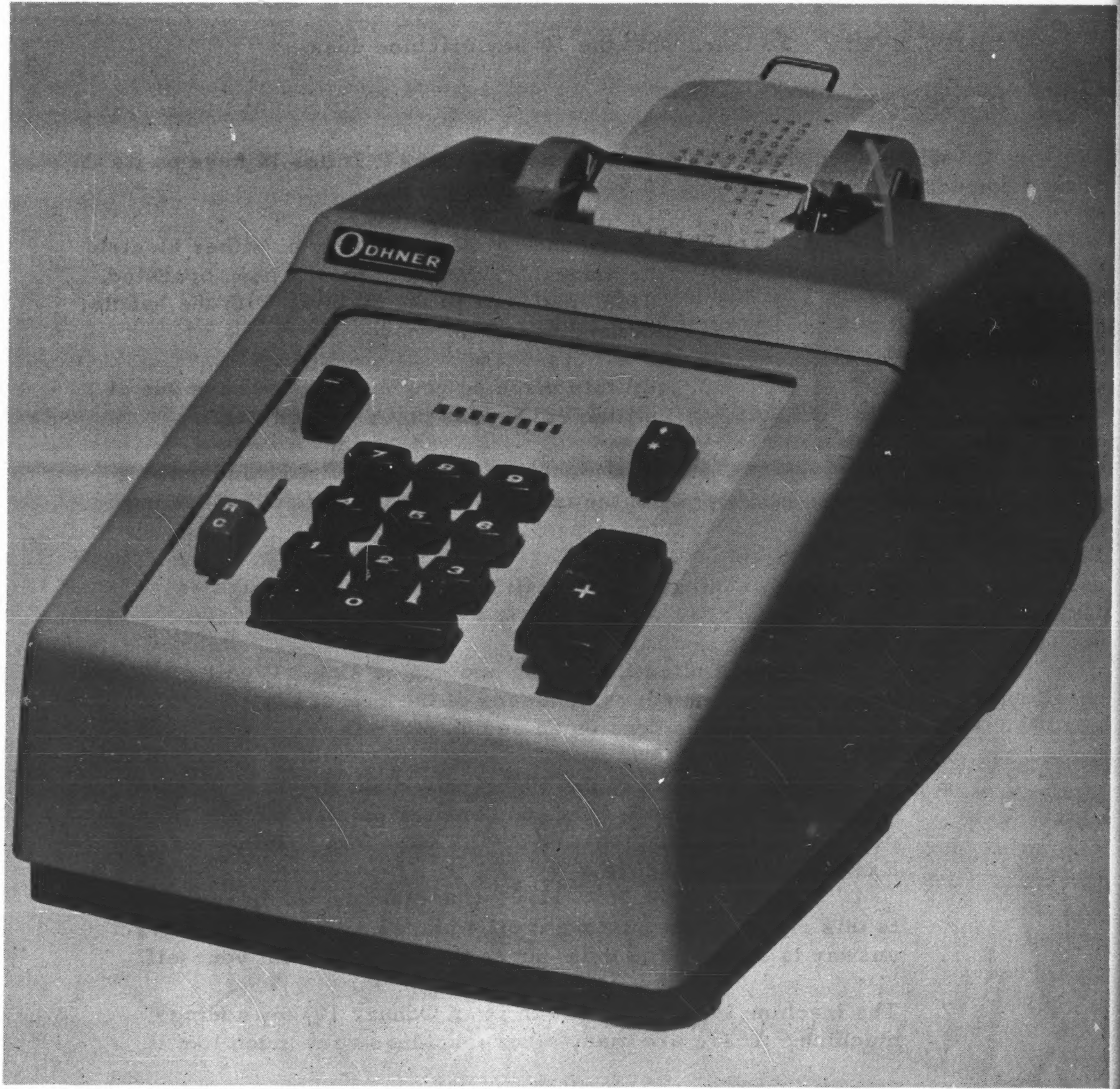
ASSIGNMENT:

A short period of practical work on machine for each student. Use Monroe Rhythm Kit.

ASSIGNMENT:

angle - ăng′ gl - slant; a difference in direction between two lines. Here are some angles:

ODHNER 10-KEY ADDING MACHINE



FACIT ODHNER, INC.

UNIT VII - ADDING MACHINES

10-Key Adding Machines - General Information Lesson 5

OBJECTIVE: To learn what the 10-key machine does.

INFORMATION:

Why do you think this machine has this name? It has 10 keys on its keyboard, so it is called a 10-key adding machine.

1. These adding machines may be either electric or manual. "Manual" means hand operated. This small one in the picture, with the handle, is hand operated.

2. On this machine you depress the keys one at a time, then push down the add bar.

3. The machine will add the figure and print it on the tape. It is a 10-key adding-listing machine.

4. The 10-key adding machine will give an answer as high as 999,999.99.

5. It is used most often for adding and subtracting. It will multiply small numbers by means of the repeat key. Division cannot be done on an adding machine.

6. The printed numbers of the 10-key machines are also pointed off at 2 places. If you want your answer pointed off with more or fewer places, you must do it with your own pencil.
   Example: 4% of \$2.76 = ?
   .04 x \$2.76 = 11.04 (the machine would say)
   Is this right? You must point off 4 places. Why? The correct answer is \$.11. You must put in the decimal point yourself.

7. The machine in the illustration is an Odhner 10-key adding machine. There are many other machines very much like it.

8. The 10-key machine is operated by touch and so is faster than a full-keyboard machine.

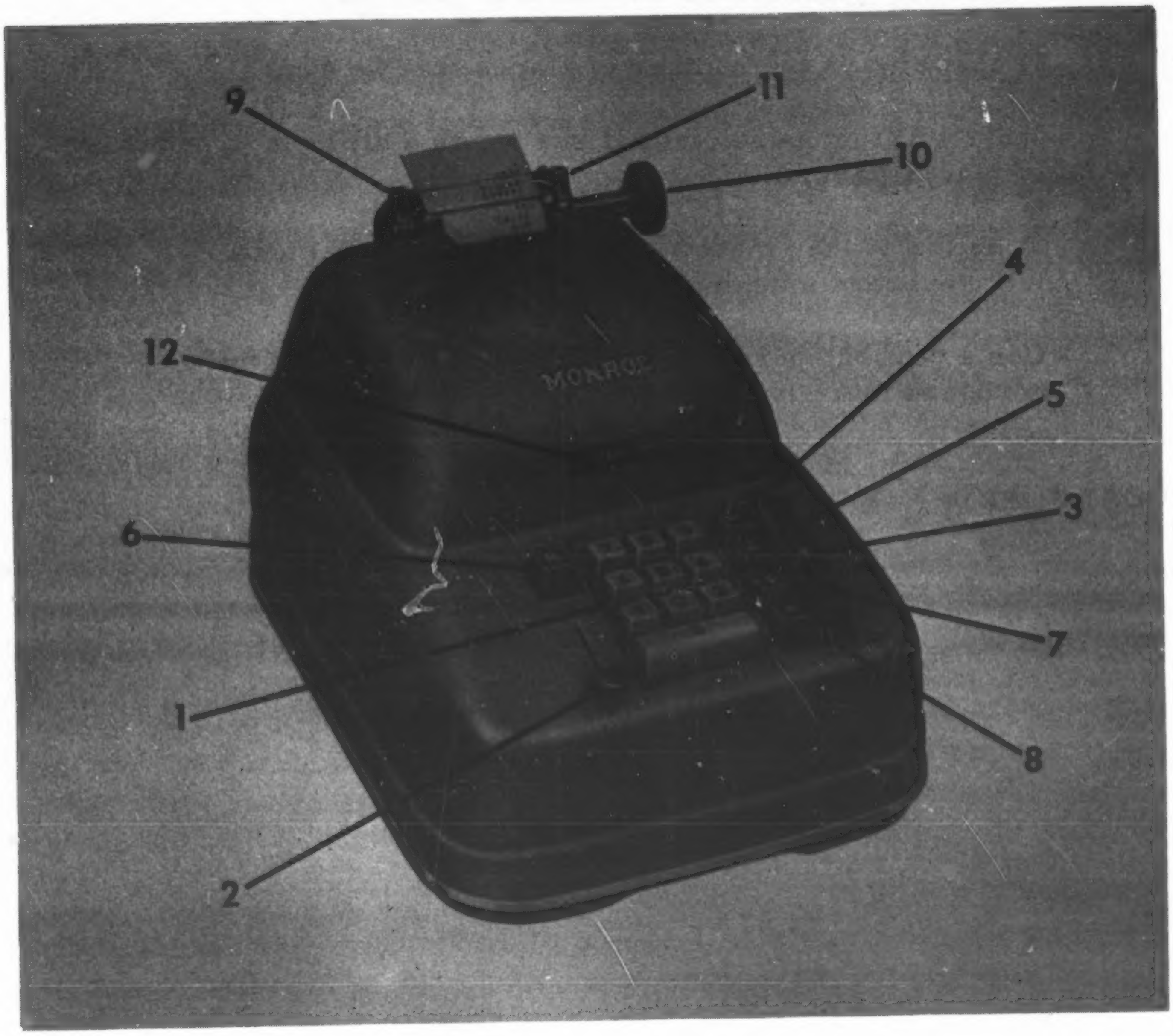
ASSIGNMENT:

1. How many places does the machine point off?
2. Is this always the number of places that we want?
3. What will the operator do if she wants a different number of places pointed off?
4. Does the 10-key machine give as large a total as a full-keyboard machine?
5. Can a person operate this machine faster than a full-keyboard machine?

VOCABULARY:

Odhner - ŏd′ nər - name of a 10-key adding machine

MONROE 10-KEY ADDING MACHINE



MONROE CALCULATING MACHINE CO.

1 **Numeral Keys**
2 **Clear Lever**
3 **Plus Bar**
4 **Minus Key**
5 **Non-add Key**
6 **Repeat Key**
7 **Sub-total Key**
8 **Total Key**
9 **Spacing Control**
10 **Platen Knob**
11 **Platen Release Lever**
12 **Column Indicator**

Monroe 10-Key Adding Machine - Parts and Their Use

Lesson 6

OBJECTIVE: To learn the names of the parts of the Monroe machine, and how to use them.

INFORMATION:

Look at the numbered parts on the Monroe 10-key adding machine on the opposite page. Here are the name and the use of each part.

1. Keyboard. - The ten numeral keys are used to get the numbers into the machine and printed on the tape.

2. Clear lever. - When pushed forward, it will clear the last numbers from the machine, if you have depressed the wrong keys by mistake. You may watch the pointer (in No. 12) to see that there are no figures in the machine.

3. Plus bar or add bar or motor bar (all mean the same). - This adds the figures to those already in the machine and causes them to be printed on the tape.

4. Minus key - for subtracting.

5. Non-add key - for numbering problems. There are also times when a figure needs to show onthe tape, but does not need to be added in. This key causes the figure to print but not to be added.

6. R - Repeat key. - When this is locked down, the machine will multiply.

7. Subtotal key (◇ symbol). - This is used when a total is wanted before the problem is entirely completed.

8. Total key.

9. Line-spacing control. - The machine will space 1, 2, or 3 lines between figures on the tape.

10. Platen knob - to turn the tape up or back.

11. Platen release lever. - This is needed to straighten the tape or when putting on a new tape.

12. Column indicator. - A pointer in the dial shows how many keys have been depressed.

ASSIGNMENT:

1. What is the platen?

2. Does any other machine have a platen?

3. What does the repeat key do?

4. What is multiplying?

5. Can division problems be done on the 10-key adding machine?

VOCABULARY:

indicator	ĭn′ dĭ kā tər	something that points out or gives information about something else
platen	plă′ tən	a round roller on a machine that holds the paper that is printed on

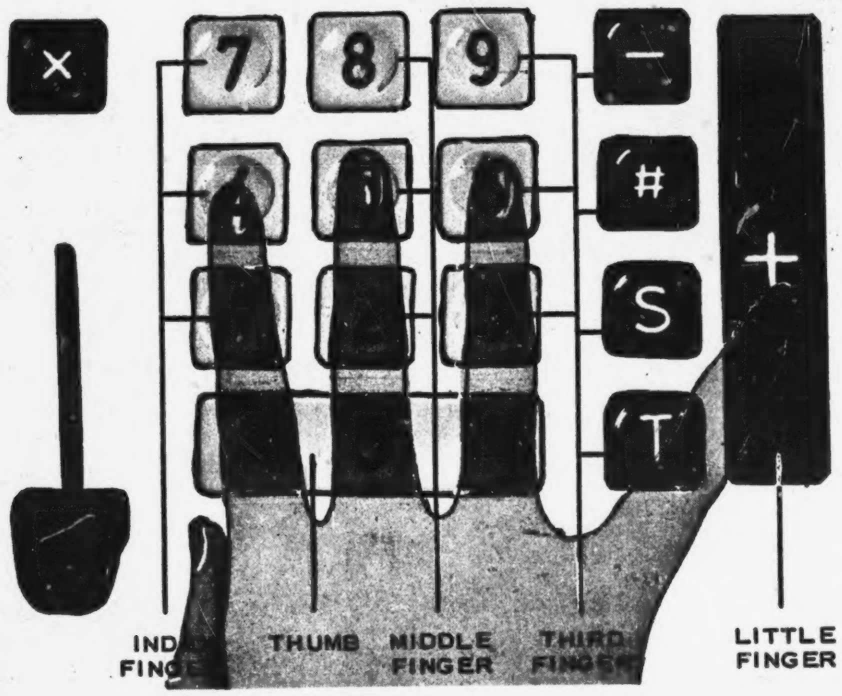
UNIT VII - ADDING MACHINES

10-Key Adding Machines - Rules for Operating

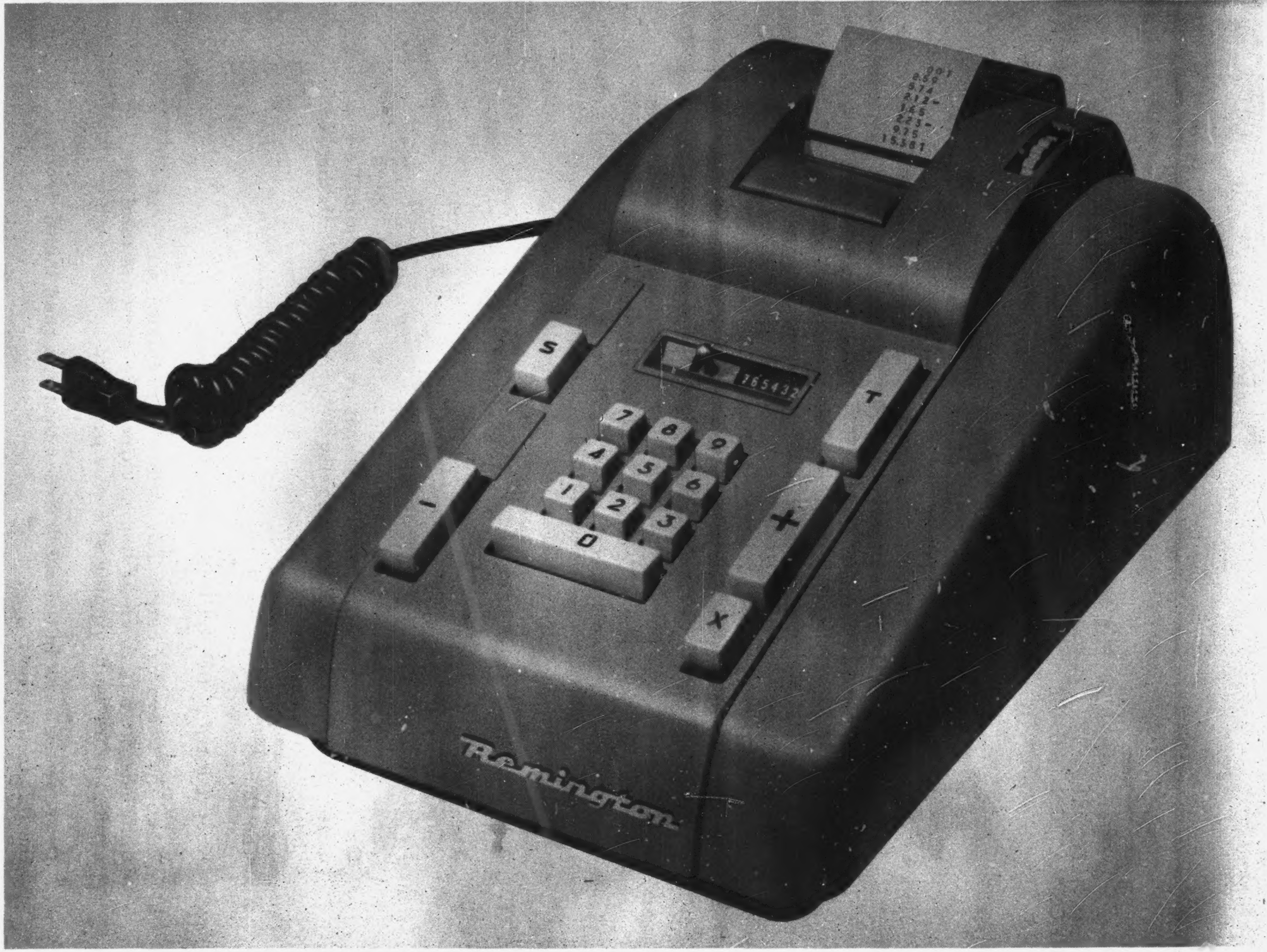
Lesson 7

OBJECTIVE: To learn how to operate the 10-key machine.

INFORMATION: RULES



1. A 10-key machine is operated by the touch method.
2. Always rest your 1st, 2nd, and 3rd fingers on the "home" keys - keys 4, 5, and 6.
3. These three keys are more concave than the rest of the keys. On most machines the 5 has a tiny spot or bead in the middle of it. The operator can know easily if her fingers are in the "home" position.
4. The thumb operates the 0.
5. Keep the tip of the 4th finger over the add bar.
6. When the operator gets ready to do any problem, the first thing she does is to clear the machine. Be sure the total symbol is at the beginning of every problem.
7. Depress the keys in the same order that you read them, from the left to the right.


765432
S
T
+
-
X
7
8
9
4
5
6
1
2
3
0
Remington

REMINGTON 10-KEY ADDING MACHINE

REMINGTON RAND OFFICE MACHINES

8. When you touch the motor bar with the fourth finger, the numbers are added into the machine and printed on the tape.

9. When you are ready to get a total, first press the motor bar once so that the machine will leave an empty space before the total. This will make it easier to find and read the total.

10. To get a total, depress the total key.

11. All work done on machines must be proofread for accuracy, and marked in such a manner that the next person will know it is correct. This is important, just as proofreading your typing is important.

ASSIGNMENT:

1. Why is a 10-key adding machine called by this name?

2. Why are some machines called listing machines?

3. The touch method means ______________________________.

4. Why isn't the touch method used on the full-keyboard adding machines?

5. When is the full-keyboard adding machine especially helpful?

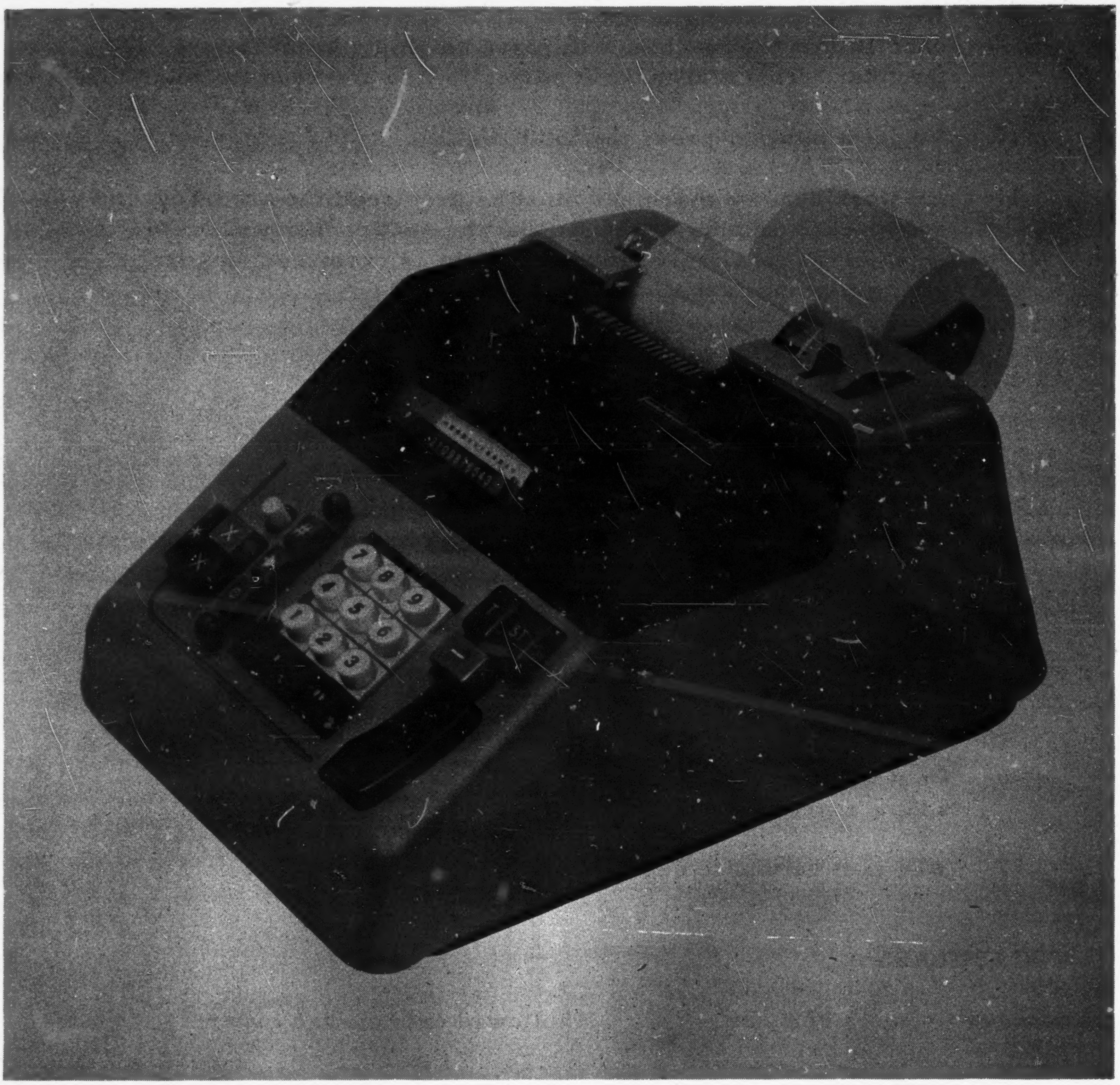
6. On which machine can a person add the fastest--the 10-key adding machine or the full-keyboard machine?

7. Why is it helpful to use a machine that has a tape?

VOCABULARY:

concave - kŏn kāv′ - hollowed out, curved inward

UNDERWOOD - OLIVETTI ADDING MACHINE



UNDERWOOD CORP.

UNIT VII - ACHIEVEMENT TEST

TRUE OR FALSE

____ 1. An adding machine can do problems faster than a person can.

____ 2. A 10-key adding machine has a "home key" row, where the fingers rest.

____ 3. This is the way the numbers on an adding machine are arranged:

7 8 9
4 5 6
1 2 3
0

____ 4. Problems are done on a full-keyboard machine by touch.

____ 5. An adding machine can have either a full keyboard or 10 keys.

____ 6. Adding machines do only division problems.

____ 7. Problems in addition, subtraction, multiplication, and division can be done on any adding machine.

____ 8. Adding machines are used because they are electric.

____ 9. All adding machines are electric.

____ 10. A key-driven machine puts the number in the machine without pushing an add or plus bar.

PRE-ADDING-MACHINE DRILL

Name ______________________________ Date ____________

DIRECTIONS: Do your figuring and write your answers on another sheet of paper.

PART I

1. Add:

2.46
31.842
7.01
118.2
10.006
______

2. Arrange in a column and add:

3.146 + 20.08 + 3.1 + 701.16 + 20.003 =

Change the following fractions into their decimal equals.

3. $\frac{1}{2}$ = __________
4. $\frac{1}{4}$ = __________
5. $\frac{3}{8}$ = __________
6. $\frac{3}{4}$ = __________
7. $\frac{3}{10}$ = __________
8. $\frac{2}{5}$ = __________

Add: Change the fractions to decimals and add.

9. $2\frac{3}{4} + 6\frac{1}{5}$ = __________

10. $8\frac{1}{2} + 7\frac{3}{4} + 4\frac{5}{8} + 6\frac{1}{5}$ = __________

Multiply: Change the fractions to decimals and multiply.

11. $1\frac{1}{2} \times 2\frac{1}{5}$ = __________

12. $1\frac{3}{4} \times 12$ = __________

Put the decimal point in the right place in the answer.

13. .48 x 826 = 39648
14. .037 x .017 = 629
15. 1.8 x 2.4 = 432
16. 1.006 x 3.5 = 35210

17. Find the total:

2 books @ $2.25 $__________
3 pens @ .98 __________

TOTAL __________

Put the decimal point in the right place in the answer.

18. 34.44 ÷ 246 = 14

19. 2625 ÷ 7.5 = 35

20. .1995 ÷ .019 = 105

(Part I: Score 5 points for each right answer)

PART II

Change to percents.

1. 1.18 = ______%

2. .50 = ______%

3. .5 = ______%

4. $3\frac{1}{2}$ = ______%

5. .016 = ______%

Change to decimals.

6. 87% ______

7. 325% ______

8. 8.2% ______

9. .25% = ______

10. 124.4% = ______

	Gross Amount	Rate of Discount	Amount of Discount	Net Amount
11.	$85.00	3%	$______	$______
12.	$50.40	$2\frac{1}{2}$%	$______	$______
13.	$18.00	1%	$______	$______
14.	$100.00	10% and 10%	$______	$______

15. $2.00 is what percent of $4.00? ______%

16. $200 plus 10% is what amount? ______%

	Gross Amount	Rate of Interest	Amount of Interest	Total Amount
17.	$4500.00	3%		
18.	3.85	5%		
19.	268.26	$4\frac{1}{2}$%		
20.	168.72	$3\frac{1}{2}$%		

(Part II: Score 5 points for each right answer)

OFFICE PRACTICE

Practice Work for the Full-Keyboard Adding Machine

Before you learn to use this machine, the teacher will give you a "Pre-Adding-Machine Drill." This is to see if you know how to do the arithmetic that you will find in the problems later.

DIRECTIONS: Put your name and date on the top of each tape. Put the page number on your tape and the number of the problem if it is given. At the end of each class, put your tapes in the office-practice basket.

1. Use the book Office Machines Course by Agnew.
   Do not write in this book. Study pages 1-2.
   Do Jobs 1-4, pages 3-10, 3 times each
   Do Jobs 5-9, pages 11-20, 2 times each
   Always CLEAR your machine first

   Test: Job 10, pages 21-22, once each; timed.

2. Practice problems
   Use the book How to Use the Adding and Calculating Machines by Walker, Hanna, & Roach. Do not write in this book.
   Directions:
   Do each problem once. Check your tapes carefully (see page 45 in 2nd edition or page 39 in 1st edition). Sometimes it will be clearer if you write your answers on a separate answer sheet. Be sure to attach your tapes to it.

   Problem, page 46 (2nd edition) (page 40 in 1st edition)
   Office Assignment No. 111
   Office Assignment No. 112
   Office Assignment No. 113. Use separate answer sheet.
   Problem, page 54 (2nd edition) (page 58 in 1st edition)
   Office Assignment No. 115
   Office Assignment No. 116. Use separate answer sheet.
   Lesson 13--all problems on first and second pages of this lesson
   Office Assignments Nos. 117-118. Use separate answer sheet.
   Lesson 14--problems 1-15
   Office Assignment No. 119. Use separate answer sheet.

   Test: Office Assignments Nos. 121, 125, 127, and 128. Write your answers on a separate paper and attach your tapes.

OFFICE PRACTICE

Practice Work for the 10-Key Adding Machine

Before you learn to use this machine, the teacher will give you a "Pre-Adding-Machine Drill." This is to see if you know how to do the arithmetic that you will find in the problems later. If you have already taken this test, do not take it again.

Directions:
Put your name and date on the top of each tape. Put the page number on your tape and the number of the problem if it is given. At the end of each class, put your tapes in the office-practice basket.

1. Use the book Office Machines Course by Agnew.
   Do not write in this book.
   Study pages 23-24.
   Do Job 11, pages 25-28, 3 times each. Always CLEAR your machine first.

   At the beginning of each period, practice adding the two sets of checks once. You will be timed on this.
   Do Jobs 12-18, pages 29-44, 2 times each.

   Test: Job 20, pages 47-48, once each; timed.

2. Practice problems
   Use the book How to Use the Adding and Calculating Machines by Walker, Hanna, & Roach. Do not write in this book.

   Directions:
   Do each problem once. Check your tapes carefully (see page 9 in 2nd edition or page 5 in 1st edition). Sometimes it will be clearer if you write your answers on a separate answer sheet. Be sure to attach your tapes to it.

   Office Assignment No. 101
   Office Assignment Nos. 102, 103, 104, and 105. Use separate answer sheet.
   Office Assignment No. 106. Use separate answer sheet.
   Lesson 6--all problems on first and second pages of this lesson
   Office Assignment No. 107. Use separate answer sheet.
   Office Assignment No. 108. Use separate answer sheet.
   Lesson 7--all problems on first and second pages of this lesson
   Office Assignment No. 220. Use separate answer sheet.
   Office Assignment No. 222. Use separate answer sheet.
   Office Assignment No. 129. Use separate answer sheet.
   Office Assignment No. 130. Use separate answer sheet.

   Test: Office Assignment Nos. 109, 205, 221, 206. Write your answers on a separate paper and attach your tapes.

FACTS to be considered as needed during the study of UNITS VII, VIII, and IX.

I. Office terms commonly used when working with figures:

a. Add bar, plus bar, motor bar -- all mean the same thing; push it down and the figures are added into the machine.

b. Put the figure in - depress the keys on the keyboard; push the add bar.

c. Take out, subtract out - depress the keys needed, push the subtract bar.

d. Take a total - add or subtract, multiply or divide, or whatever you must do, but at the end, depress the total key and get a final answer.

e. Check out - prove your total in one of several ways.

f. Pick up - put a figure in the machine.

g. Check against - check or prove your figures by comparing them with another set of the same figures.

II. Common errors while working with figures:

If you are picking up hand-written figures, be sure you read the figures correctly.

a. The most common errors in reading figures are in mistaking one figure for another. Example:

1. 3 is mistaken for 5 or 8
2. 4 is mistaken for 9
3. 7 is mistaken for 1
4. 7 is mistaken for 9

b. Another error often made is transposing (interchanging) two digits in the middle of a number. Example:

Reading 6837 as 6387

III. Steps to take when looking for an error:

a. Find the amount of the error. Subtract one answer from the other.

b. If that amount divides evenly by 9, the error is possibly a transposition of figures. Example:

18 for 81
81 - 18 = 63
63 ÷ 9 = 7

Then when you check the figures you will look especially for two figures changed around.

c. If it is not a transposition, think! Can you remember working with a figure of the same amount? If so, find it. Perhaps you have omitted it or added it twice.

d. If the difference is 90, you may have used 100 for 10, or the other way around. If the difference is 9, perhaps you have misread .10 and .01.

e. Check your figures against an original copy of all the figures you have just used.

f. Be sure you know whether you need to add or subtract the amount of the error. Example: Your answer comes out 6¢ too much. When you check one set of figures against another, you may find a 3¢ error. How will you correct this?

g. After you have found the error, and must make a change, be sure you make the corrections first, in the proper pace and then at the bottom of the tape by adding or subtracting, so that any person who looks at the tape will know that you have found the error and have corrected it. Anyone must be able to see exactly what you have done.

Checking
a
Tape

IV. Facts to know about adding and calculating machines:

a. The touch system is always used on 10-key machines.

b. The touch system is not used on full-keyboard machines.

c. There is one exception to "b". The touch system is used on full-keyboard key-driven machines.

d. Almost all machines are electric. A few are key driven, and some are hand operated.

e. When using 10-key machines, depress one key at a time.

f. When using a full-keyboard machine, depress as many keys at one time as you can reach. This way you can work much faster.

g. Always use the tip of the little finger on the add bar. Use it as a pivot.

h. When picking up figures on the full-keyboard machine, learn to read numbers as a whole, all at one time. Example:
    Read 1045, the whole number, as you see it.
    Do not see 1, then 0, then 4, and then 5.

i. When checking a tape against the figures, always use a pencil and not a pen to make the check marks; then they can be erased if further checking is needed.

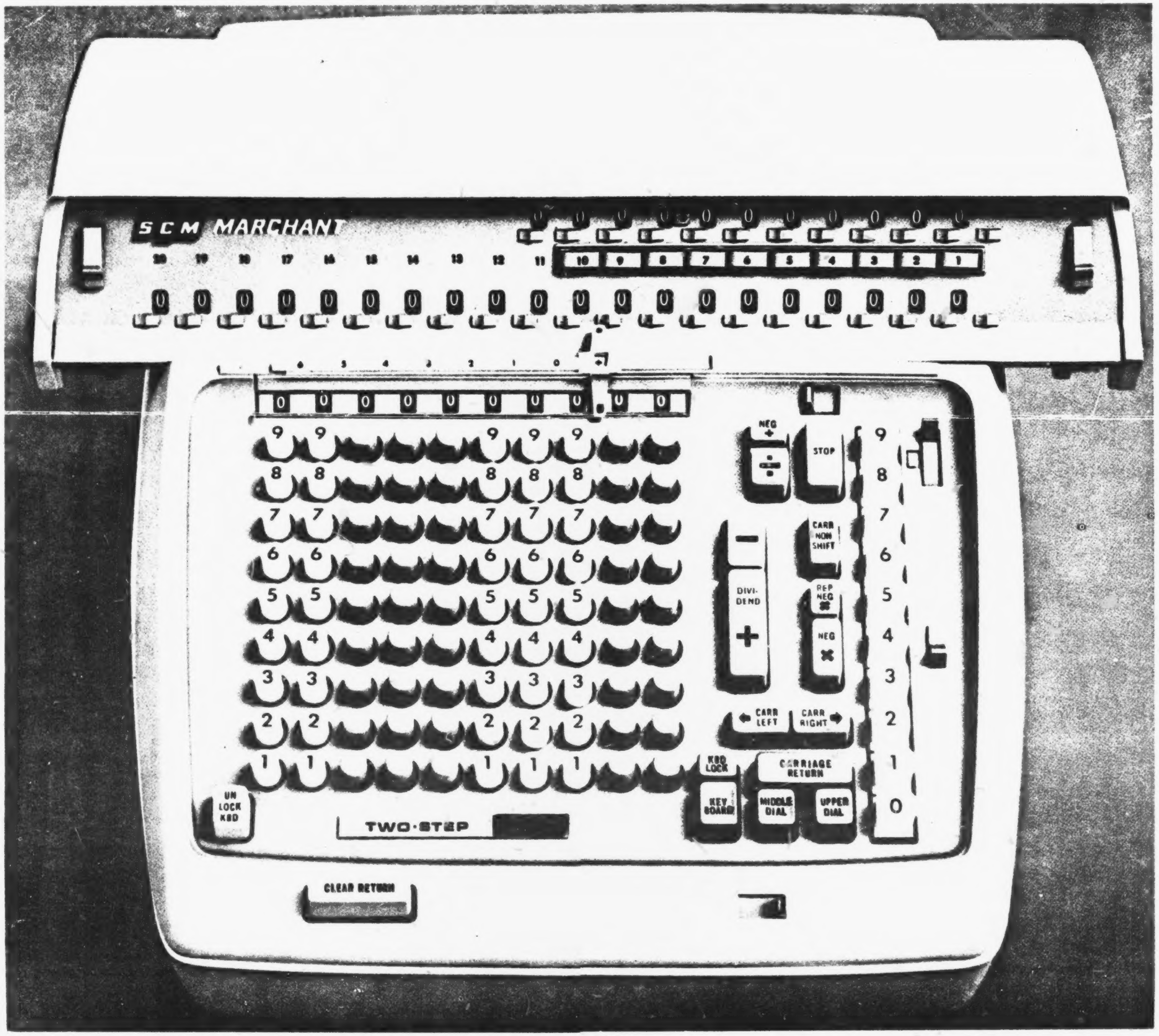
j. When checking a tape, always leave the small check marks, so the next person will know that you have proven the work to be correct.

k. All machine work must be checked for accuracy. Do not just "think" the work is correct.

l. Never prove the machine figures with hand work, but prove your work with the machine.

m. Different makes of machines may have different symbols, and the special keys and bars may be in different places on the machine. However, all makes of a particular type of machine will be similar. Before beginning a problem, use the machine for a short time to be sure you know what each bar and key will do.

n. KNOW YOUR MACHINE!


SCM MARCHANT
NEG ÷
STOP
CARR NON SHIFT
DIVI-DEND
REP NEG ×
NEG ×
CARR LEFT
CARR RIGHT
KBD LOCK
CARRIAGE RETURN
KEY BOARD
MIDDLE DIAL
UPPER DIAL
UN LOCK KBD
TWO·STEP
CLEAR RETURN

NEW MARCHANT TWO-STEP™

SCM CORPORATION

UNIT VIII - CALCULATING MACHINES

The Calculator - What It Is Lesson 1

OBJECTIVE: To learn what a calculator is and what kinds of problem can be done.

INFORMATION:

A calculator is a machine which does problems in arithmetic.

A calculator can do one more kind of problem than an adding machine; it can add, subtract and multiply, and also it can divide.

It is used in offices where there are many problems in multiplication and division.

The keyboard looks very much like a full-keyboard adding machine; it has banks and columns of numbers from 1 to 9.

Most calculators have a full keyboard. You will use the same fingering as on a full-keyboard adding machine; you do not use the touch system.

Notice that this machine has no tape. That means it cannot be a listing machine.

This is often called a rotary calculator.

Behind the windows are the dials. When a number is put in the machine, and the add bar is depressed, the number keeps adding in and showing on the dials. You can see that the dials are going around and around. "Rotary" means going around.

All rotary machines are non-listing.

Calculators may be electric or manual. Many companies make this kind of calculator.

ASSIGNMENT:

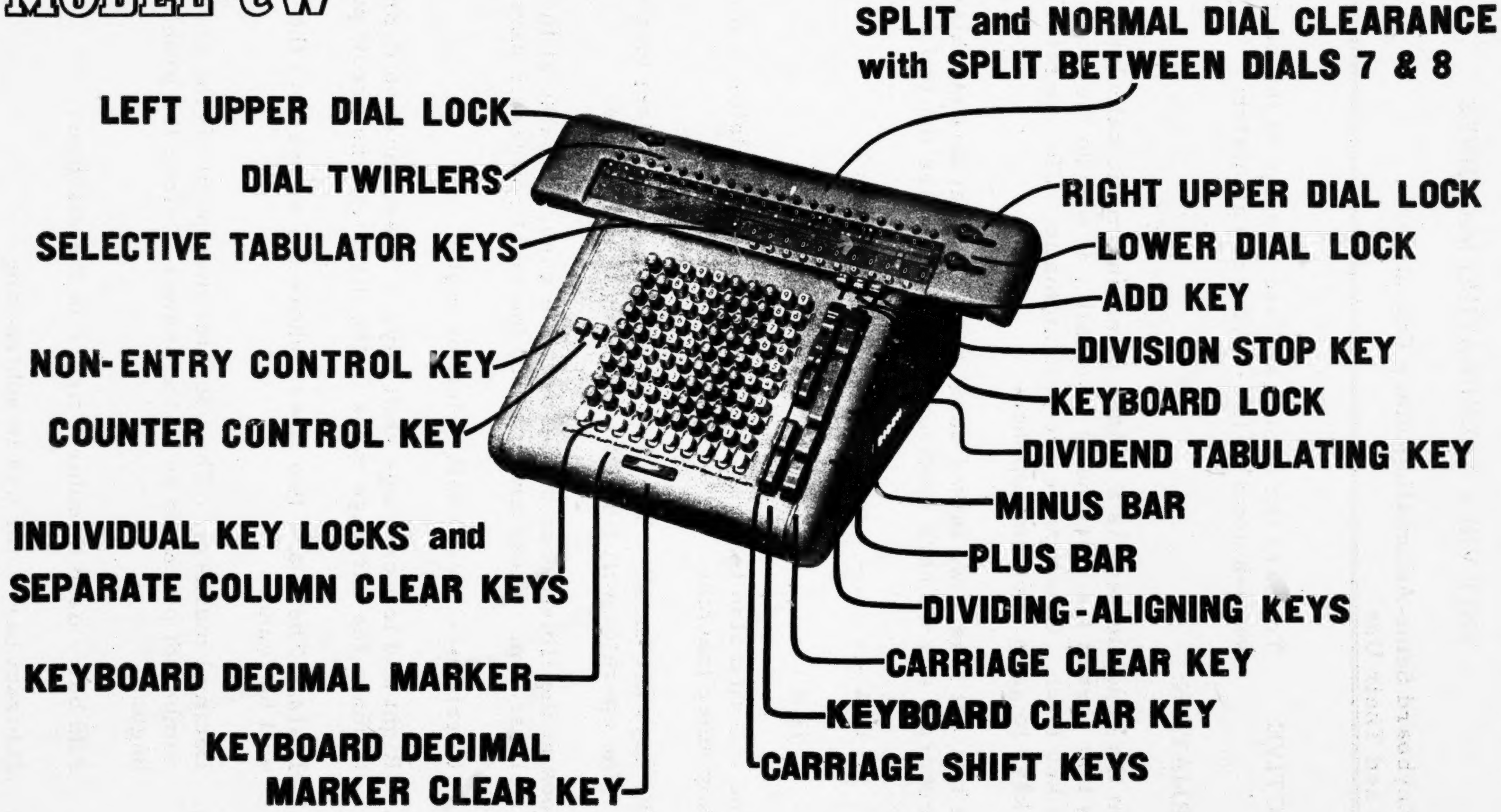
1. Most rotary calculators have a ____________ keyboard.
2. What kind of problem can a calculator do that an adding machine cannot do?
3. What is the name of the calculator you will work on?
4. Does your classroom have a manual calculator?

VOCABULARY:

calculator	kăl′ kū lāt′ tər	a machine that can add, subtract, multiply, and divide.
dial	dī′ ȧl	a round face, often like the face of a clock, that tells about something
Friden	frē′ dĕn	name of a calculator
Marchant	mär′ shănt	name of a calculator
Monroe	mŏn rō′	name of a calculator
rotary	rō′ tȧ rĭ	turning around in a circle

FRIDEN *Automatic Calculator*

MODEL-CW


SPLIT and NORMAL DIAL CLEARANCE with SPLIT BETWEEN DIALS 7 & 8
LEFT UPPER DIAL LOCK
DIAL TWIRLERS
RIGHT UPPER DIAL LOCK
SELECTIVE TABULATOR KEYS
LOWER DIAL LOCK
ADD KEY
DIVISION STOP KEY
NON-ENTRY CONTROL KEY
KEYBOARD LOCK
COUNTER CONTROL KEY
DIVIDEND TABULATING KEY
MINUS BAR
INDIVIDUAL KEY LOCKS and SEPARATE COLUMN CLEAR KEYS
PLUS BAR
DIVIDING-ALIGNING KEYS
KEYBOARD DECIMAL MARKER
CARRIAGE CLEAR KEY
KEYBOARD CLEAR KEY
KEYBOARD DECIMAL MARKER CLEAR KEY
CARRIAGE SHIFT KEYS

UNIT VIII - CALCULATING MACHINES

Full Keyboard Semi-Automatic Rotary Calculator - Parts and Their Use

Lesson 2

OBJECTIVE: To learn the names and use of some of the parts of a semi-automatic full-keyboard calculator.

INFORMATION:

On the opposite page is a Friden semi-automatic calculator. This means that part of the machine is automatic; it will do the work when you push a key down. Other parts are not automatic. The operator must use more keys to get a problem finished.

In the last lesson we talked about two ways that this machine is different from any we have studied before. What are the two differences?

1. It is a - - - - - - machine.
2. It is a - - - - - - - - - - - machine.

You will find also that the touch on a rotary calculator is different from any other machine.

The keys are small. They depress with a quick, firm touch and stay down. The operator will find this is a very fast machine.

Look at the illustration on the opposite page, and also at the machine in your classroom. These are some of the most noticeable parts:

1. Carriage - moves either left or right.
2. Right and left carriage shift keys. - These must be depressed to make the carriage move in the direction the arrow points.
3. Dials. - There are two rows, where the answers to the problems will be found.
4. Decimal markers. - The operator may point off the correct number of places to be in the answer, before the problem is begun.
5. Add bar - used to enter a figure in the machine.
6. Subtract bar - for use in subtracting.

7. Add lever - the operator must learn how to use it for each of the different kinds of problems.

8. "KB Clear" - keyboard clear - the bar to push when you want the keys to "come up." It clears the keyboard of any numbers.

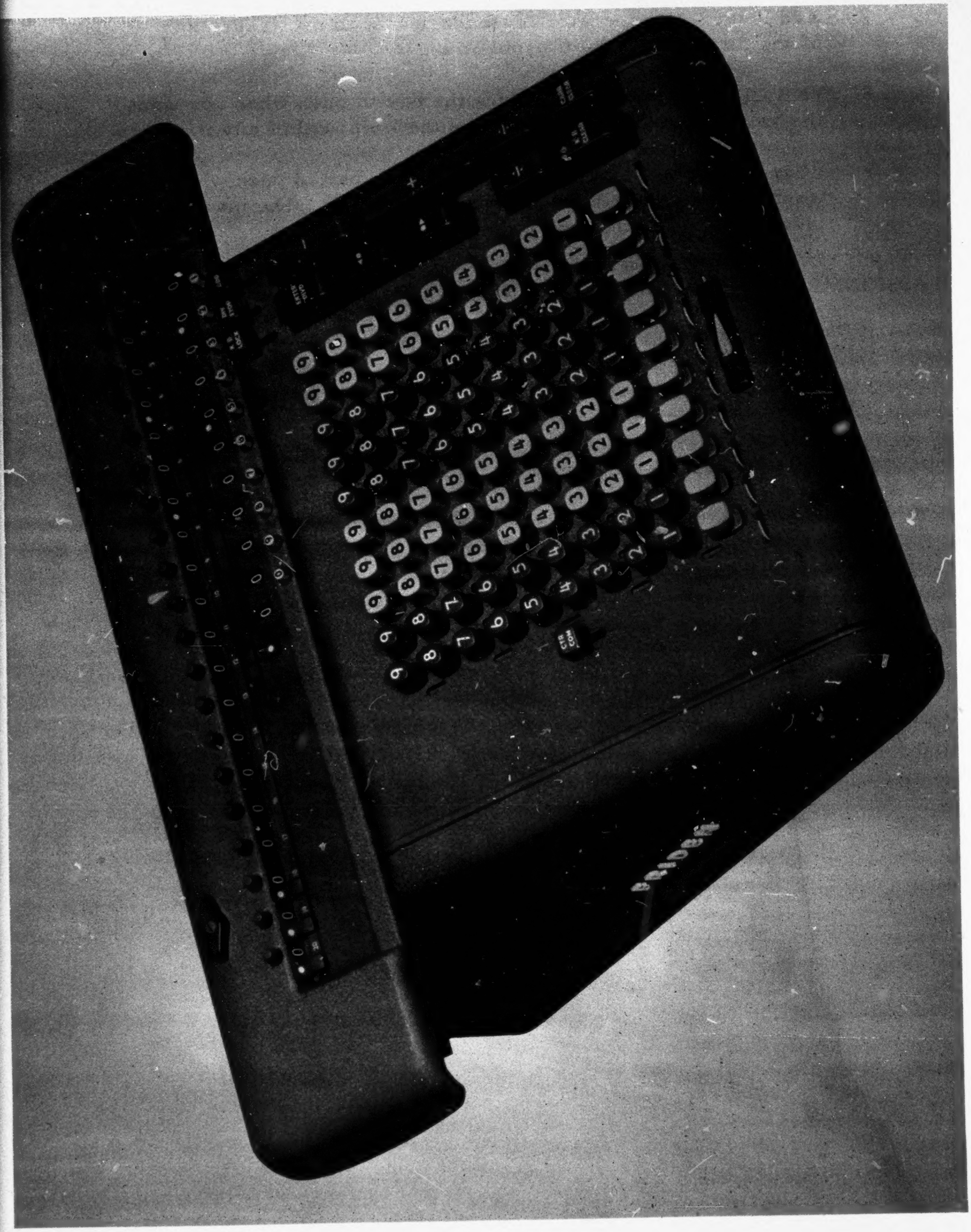
9. "Carr Clear" - carriage clear bar - the bar to push when you want to take all the numbers out of the dials. The machine is clear, ready for the next problem.

ASSIGNMENT: Find each of these parts on the machine and name it.

1. A small bar that will cause the carriage to move to the left.
2. The small part that will help the operator to keep the answer pointed off correctly.
3. What you would use in a problem in division.
4. A small bar that will cause the carriage to move to the right.
5. A large part of the machine that moves.

VOCABULARY:

decimal - dĕs′ ĭ mȧl - a part of a number. The decimal part of a number is really a fraction - always less than 1. In the number 38.49, .49 is the decimal part. It is an easier way of writing $38\frac{49}{100}$.



FRIDEN FULL KEYBOARD SEMI-AUTOMATIC ROTARY CALCULATOR

FRIDEN, INC.

UNIT VIII - CALCULATING MACHINES

Full-Keyboard Rotary Calculator - How To Add and Subtract

Lesson 3

OBJECTIVE: To learn how to add and subtract on this machine.

INFORMATION:

On all calculating machines, adding and subtracting are the easiest things to do.

One problem is:
Plus $53. 97
Plus $10. 82
Minus $ 8. 04

Follow the steps below in order to solve it:

1. Place the add lever down, or towards you.
2. Be sure the carriage is as far to the left as possible.
3. Depress the KB clear and the carr clear keys at the same time.
4. Now the numbers in the dials and all numbers in the keyboard have been taken out. The machine is ready for the next problem.
5. Set the decimal marker for the upper dials on the carriage at 2 places. You can see now that this problem will need 2 places, because it is in dollars and cents, and you are adding.
6. Set the keyboard decimal markers for the same number of places as the dial is set.
7. Set $53. 97 on the keyboard.
8. Depress the add bar.
9. The upper dials will read $53. 97 and the lower dials will read 1.
10. Set $10. 82 on the keyboard.
11. Depress the add bar.
12. The upper dials will now read $64. 79 and the lower dials will read 2. This means $64. 79 is the total this far, and you have entered figures in the machine two times.

13. Set $8. 04 on the keyboard.

14. Depress the minus bar.

15. The upper dials will read $56. 75.

16. The lower dials will read 1. You had 2 in the lower dials but you subtracted out 1.

Below is a second problem. Where will you set the decimal markers?

```
   3928567
 +  108201
 -    2019
```

ASSIGNMENT:

1. When should you set the decimal markers when adding or subtracting?

2. How do you get the total to an addition problem on this machine?

3. Make up a problem in addition and subtraction and show where the answer should be pointed off.

4. Work your problem on the rotary calculator.

5. Use the rotary calculator and find the answers for the following problems:

```
  Plus 703        Plus 250      Plus 405       Plus 843
 Minus 400        Plus  12     Minus  45       Plus  34
 Minus  25       Minus   5                    Minus  84

  Plus 655        Plus 110      Plus  98       Plus 902
 Minus  55       Minus  34     Minus  27       Plus 704
 Minus  60                      Plus  17      Minus 306

  Plus 889        Plus 155      Plus 734       Plus 312
 Minus  89       Minus  40     Minus 321      Minus  12
                               Minus 198

  Plus 821        Plus 500      Plus 300       Plus 395
 Minus 550       Minus  10      Plus 150      Minus  59
 Minus 210       Minus 200     Minus 100       Plus  36
```

VOCABULARY: solve - sŏlv - find the answer

Full Keyboard Semi-Automatic Rotary Calculator - How to Multiply

Lesson 4

OBJECTIVE: To learn how to multiply on this machine.

INFORMATION:

In a previous lesson, you learned that multiplying is the same as adding over and over again. But multiplying, either by hand or by machine, can be done faster than adding many times.

1. In multiplying, you will again set the decimal markers before you begin the problem. Where should they be set for this problem: $2.19 X .06?
2. Clear the keyboard and the dials.
3. Put the add lever down.
4. Set the carriage as far to the left as possible.
5. Problem: 743 X 619
6. Put the larger number (743) on the keyboard. This number is called the multiplicand.
7. Depress the add bar until the number 743 has been added in 9 times (this is the 9 from 619). You will be able to feel the machine enter the figures or you can watch the dials.
8. Now you will have 6,687 in the upper dials and 9 in the lower dials.
9. Depress the shift key pointing right while carriage moves one place to the right.
10. Depress the add bar while the multiplicand is added in once. (The 1 in 619.) The upper dials will read 14,117 and the lower dials, 19.
11. Depress the shift key pointing right again, and move the carriage one place to the right.

12. Depress add bar while the machine adds in the multiplicand six times (6̲19).

13. Now you will have 459,917 in the upper dials and 619 in the lower dials.

    The keys 743 will still be depressed. The lower dials show 619. You can see quickly that you have multiplied 743 by 619; therefore the answer is correct.
    This is the way to check your problem for accuracy on a non-listing rotary calculator.

ASSIGNMENT:

1. When multiplying, where should the add lever be?

2. Why should it be in that position?

3. What does "semi-automatic" mean?

4. If you get an answer in the upper dials, is it necessary to read the numbers in the lower dials?

5. Complete the following problems on your calculator:

8.98 X .60 =	6.09 X 66.6 =
921 X .52 =	$127.87 X .51 =
12.7 X .985 =	$989.10 X .895 =
124 X 42.5 =	21.2 X 16.02 =

VOCABULARY:

multiplicand	-	mŭl tĭ plĭ kănd′	-	the number that is to be multiplied by another
multiplier	-	mŭl′ tĭ plī ẽr	-	the number used to make another number larger by multiplying. In the problem 5 x 89, 5 is the multiplier and 89 is the multiplicand

Full-Keyboard Automatic Rotary Calculator - How To Multiply

Lesson 5

OBJECTIVE: To learn the steps in multiplying on a fully automatic calculator.

INFORMATION:

As we said before, the operator can work faster on the fully automatic machine. This is especially true when multiplying. For simple multiplication problems, take the following steps:

1. Clear the carriage and keyboard.
2. For this problem: 2. 35 X 54. 32, set the decimal markers on keyboard and in both dials.
    a. The larger number (54. 32) will be set on the keyboard, so set the marker between the 2nd and 3rd places.

    b. 2. 35 is the multiplier. It has 2 places pointed off. Add the 2 places in the multiplicand on the keyboard and the 2 places in the multiplier. This equals 4 places. Point off 4 places in the upper dials, where the answer will be.

    c. The multiplier (2. 35), with 2 places, will show in the lower dials, so point off 2 places there.

    d. Remember:
    the number of places pointed off in the multiplicand on the keyboard plus
    the number of places pointed off in the multiplier equals
    the number of places to be pointed off in the upper dials.
    (The answer will be in the upper dials.)
    Now you are ready to multiply 2. 35 X 54. 32.
3. Put add lever up.
4. Set 54. 32 on the keyboard.
5. Enter the multiplier (2. 35) in the 10-key section to the left. (Watch the window to be sure you have entered the correct multiplier.)

6. Depress the Mult (multiply) key. The machine will operate by itself.

The multiplicand will still be depressed on the keyboard. The multiplier will show in the lower dials, and the answer will be found in the upper dials, 127.6520.

ASSIGNMENT:

Work the above problem and get the correct answer.

Below are more problems for practice on the machine.

Point off on the machine before you begin to work.

Tell the class how you know it is right and why you pointed off as you did:

86.0001 X .887 =

98.100 X 2.867 =

.102 X 7800 =

69.2 X 81.667 =

9210 X 98.233 =

.875 X 235 =

67.05 X .009 =

49.35 X 68.71 =

86.72 X .9872 =

9210 X 6.725 =

VOCABULARY:

eliminate	-	ĕ lĭm′ ĭ nāt	-	take out, remove, leave out
operate	-	ŏp′ ər āt	-	work, run (a machine)

Full-Keyboard Automatic Rotary Calculator - How To Divide

Lesson 6

OBJECTIVE: To learn how to work division problems on an automatic calculator.

INFORMATION:

In a division problem, the answer will be in the lower dials, and the remainder, in the upper dials. Use the following procedure:

1. Clear the keyboard and the dials.

2. Put add lever down.

3. Set the decimal points in the machine.

   Set the decimal marker on the keyboard to accommodate the larger number of decimal places of the two numbers used.

   Example: 346.967 ÷ 28.1

   The larger number of places in a decimal is 3. Turn the decimal marker on the keyboard between the 3rd and 4th rows.

4. This will be the number of places that the quotient will be carried out. Set the decimal marker in the lower dial directly above this tab stop.

5. Set the dividend (346.967) on the keyboard, around the decimal marker.

6. Depress Enter Divid (dividend) key. The pressed keys will come up.

7. Set the divisor on the keyboard (around the decimal marker).

8. Depress both Divide keys at the same time. The machine will operate.

9. Find the answer in the lower dials and the remainder in the upper dials.

10. Change the decimal markers whenever necessary for each new problem.

NOTE: Dividing on a semi-automatic calculator has one slight difference, as follows:

After entering the dividend with the Enter Divid key, clear the lower dial of the figure 1 by pressing the minus key once. Proceed as in a fully automatic machine.

ASSIGNMENT:

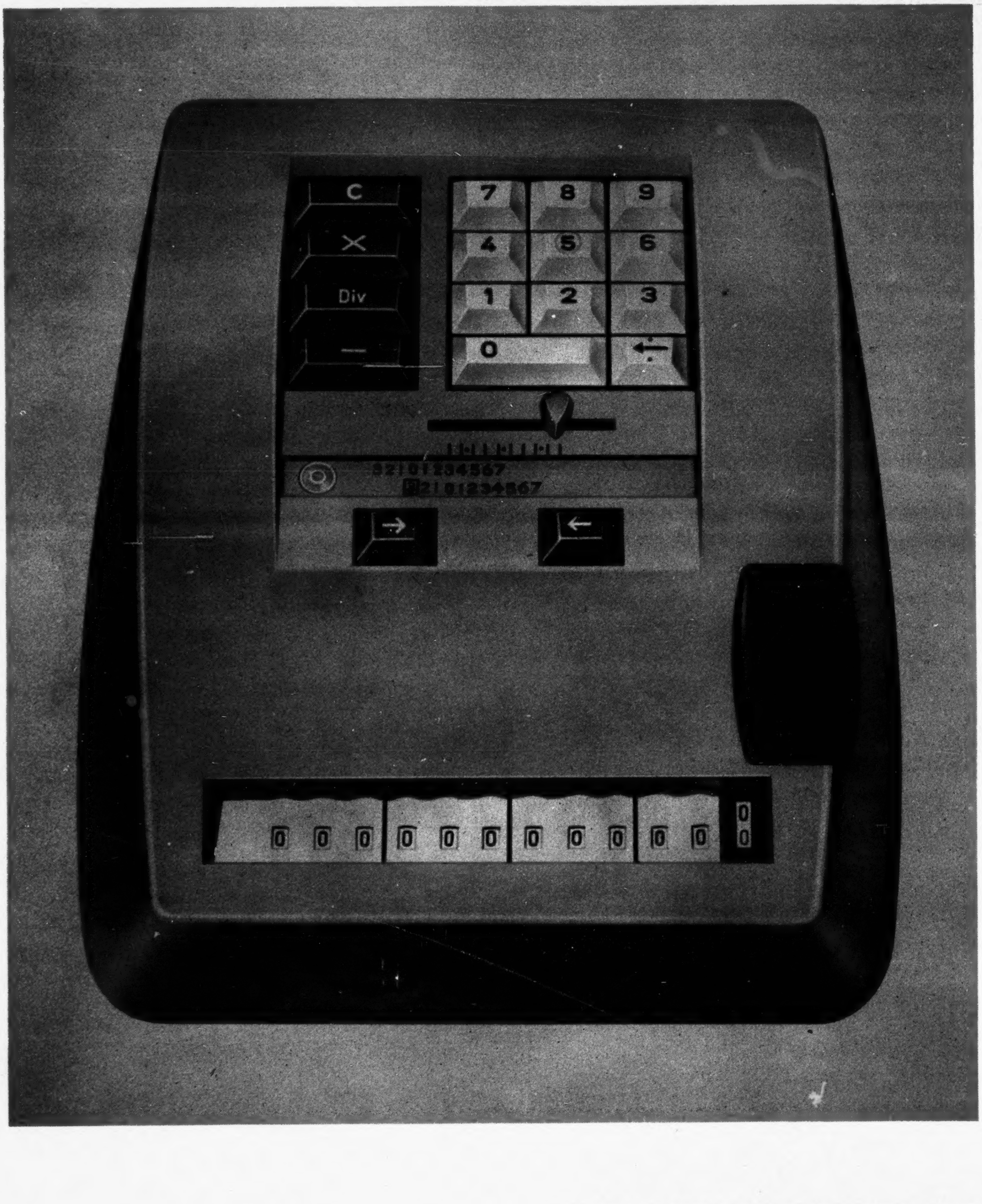
Be very sure that you know the rule for pointing off in a division problem.

VOCABULARY:

accommodate	-	ȧ kŏm′ ə dāt	-	have room for, hold comfortably; also, help out
directly	-	dĭ rĕkt′ lĭ	-	straight, in a straight line
dividend	-	dĭ′ vĭ dĕnd	-	the number that is to be divided by another
division	-	dĭ vĭ′ zhŭn	-	being divided or separated; process of dividing one number by another
divisor	-	dĭ vī′ zẽr	-	the number by which something is divided. In the division problem 31 ÷ 4, 31 is the dividend, 4 is the divisor, the quotient is $7\frac{3}{4}$ (3 being the remainder).
quotient	-	kwō′ shŭnt	-	answer to a division problem
slight	-	slĭt	-	small

NOTES

CONTEX 10


C
×
Div
7
8
9
4
5
6
1
2
3
0
3210 1234567
3210 1234567
0 0 0 0 0 0 0 0 0 0 0 0 0

BOHN BUSINESS MACHINES, INC.

10-Key Rotary Calculator - General Information Lesson 7

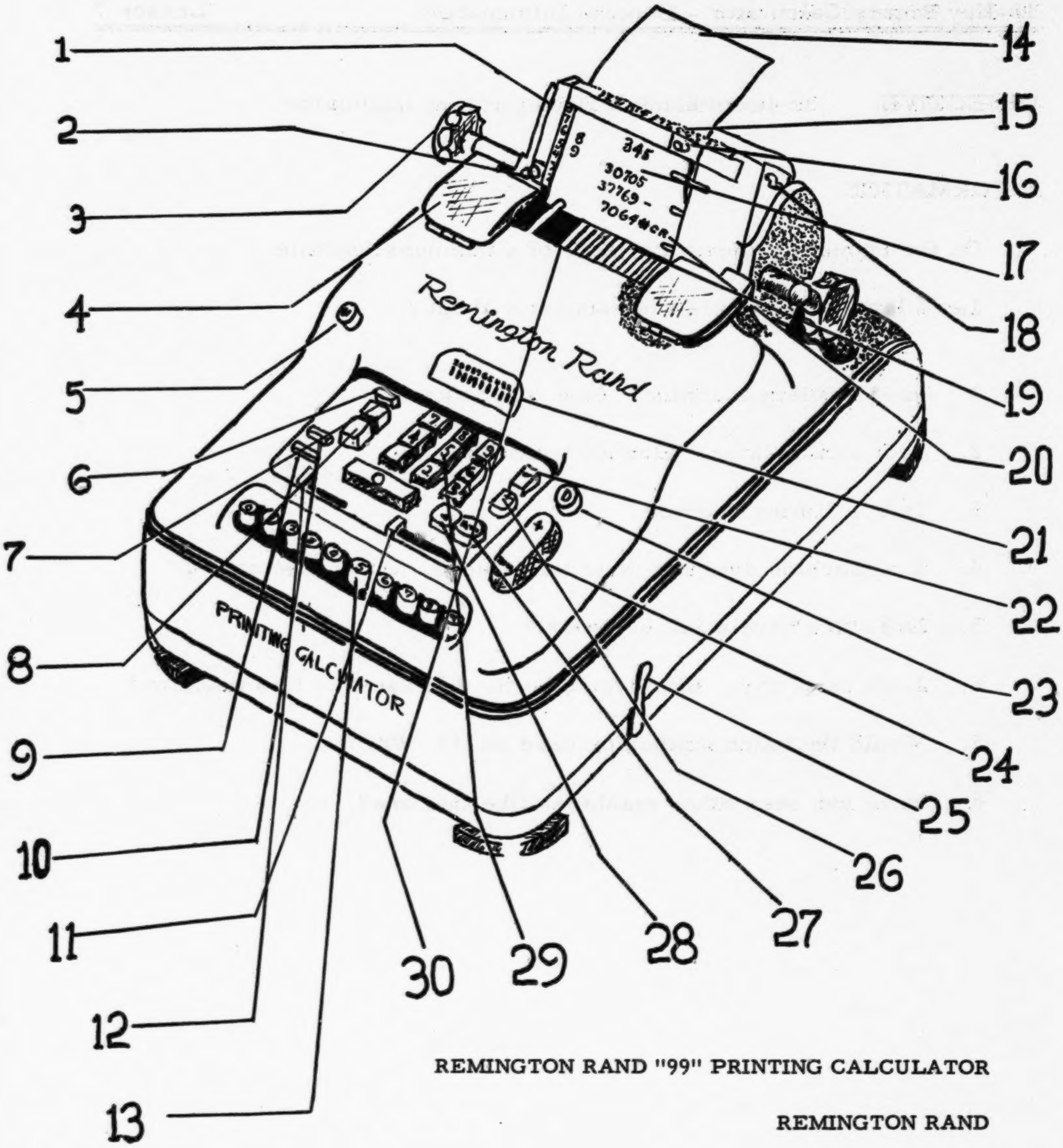
OBJECTIVE: To learn about a 10-key rotary calculator.

INFORMATION:

On the opposite page is a picture of a business machine.

Let's look at it and see what we know about it.

1. Is it a rotary machine? How do you know?
2. Is it a calculator? How do you know?
3. Is it a listing machine?
4. If a machine does not print the figures, what do we call it?
5. Does this have a full keyboard?
6. Look carefully. What would be the full name of this machine?
7. Would the touch method be used on it? Why?
8. Have you seen other machines like this one?


1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25
26
27
28
29
30
345
30705
37769 -
Remington Rand
PRINTING CALCULATOR

REMINGTON RAND "99" PRINTING CALCULATOR

REMINGTON RAND

UNIT VIII - CALCULATING MACHINES

Remington 10-Key Printing Calculator - Parts and Their Use **Lesson 8**

OBJECTIVE: To learn the names and use of parts on the Remington Rand listing calculator.

INFORMATION:

Let's look at this picture. What is the name on the machine? What company made it?

What is number 5? It is a division key. When a machine will do division, it is a ______________.

It has a tape, so it is a ____________ calculator.

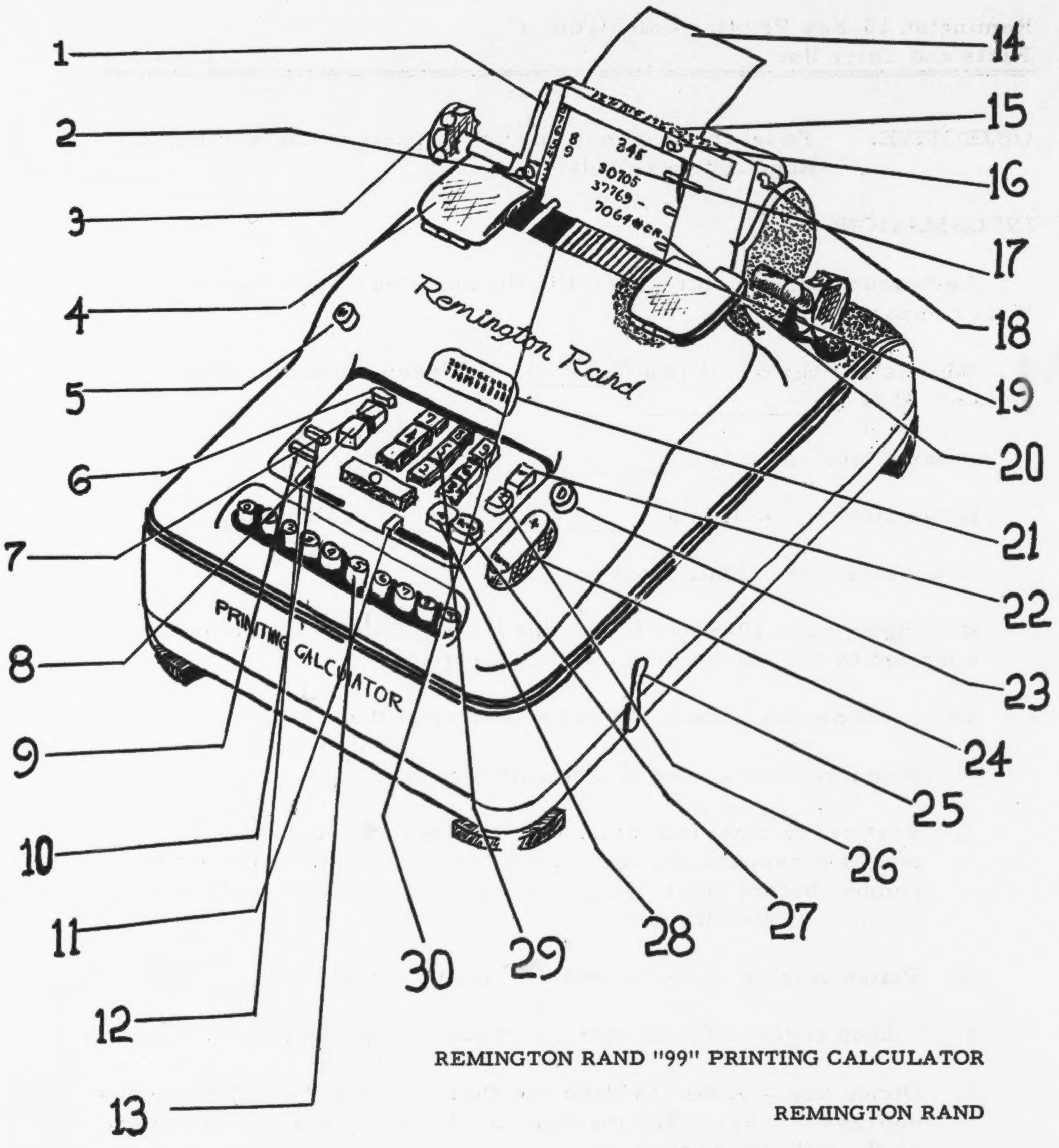
It has 10 keys, so it is a ____________ __________ calculator.

Now we have the name, It is a:

Remington Rand 10-Key Printing (or listing) Calculator and is operated by the touch system. It is electric.

The parts are as follows: (You know many of them.)

1. Paper release - used to straighten the tape.
2. Vertical decimal indicator. - This slides up and down. It makes it easy for the operator to put the decimal point in the number before entering the figures. This number could be a quotient or a multiplier.
3. Platen twirler - used to roll the tape up rapidly.
4. Ribbon cover. - It will open to let you change the ribbon.
5. Divide key. - After Dividend and Divisor are put into the machine, depress this key. The machine divides and gives you an answer on the left side of the tape.
6. Total control key, marked AUTO (for automatic). - This means that this key can be pushed to the right or left, and give an answer (total) or not.


1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25
26
27
28
29
30
245
30705
37769 -
7064 CR
Remington Rand
PRINTING CALCULATOR

REMINGTON RAND "99" PRINTING CALCULATOR

REMINGTON RAND

Push key to the right; you will get an answer at the end of a multiplication problem. Push it to the left; the machine will multiply but will not print the answer until later in the problem when you want it.

7. Non-add key. - This will print the number, but will not add it.

8. Subtotal key. - Depress it, and the machine will give you a subtotal, with the symbol "S".

9. Subtotal lock. - If you are adding a long column of figures and want more than one subtotal, lock the subtotal key down. Release the key when the total is needed.

10. Release key. - This will release the non-add or subtotal key if it is depressed in error. (It will also stop the machine during multiplication or division.)

11. Correction key - clears keyboard.

12. Backspace key. - This will remove from the keyboard the last digit you have entered.

13. Multiply keys. - After you put the multiplicand on the keyboard, depress one of these keys and the machine will multiply.

14. Tape - gives you a printed record of all that you have done.

15. Value scale. - This helps you to read the figures quickly and easily either by dollars and cents or by hundreds and thousands.

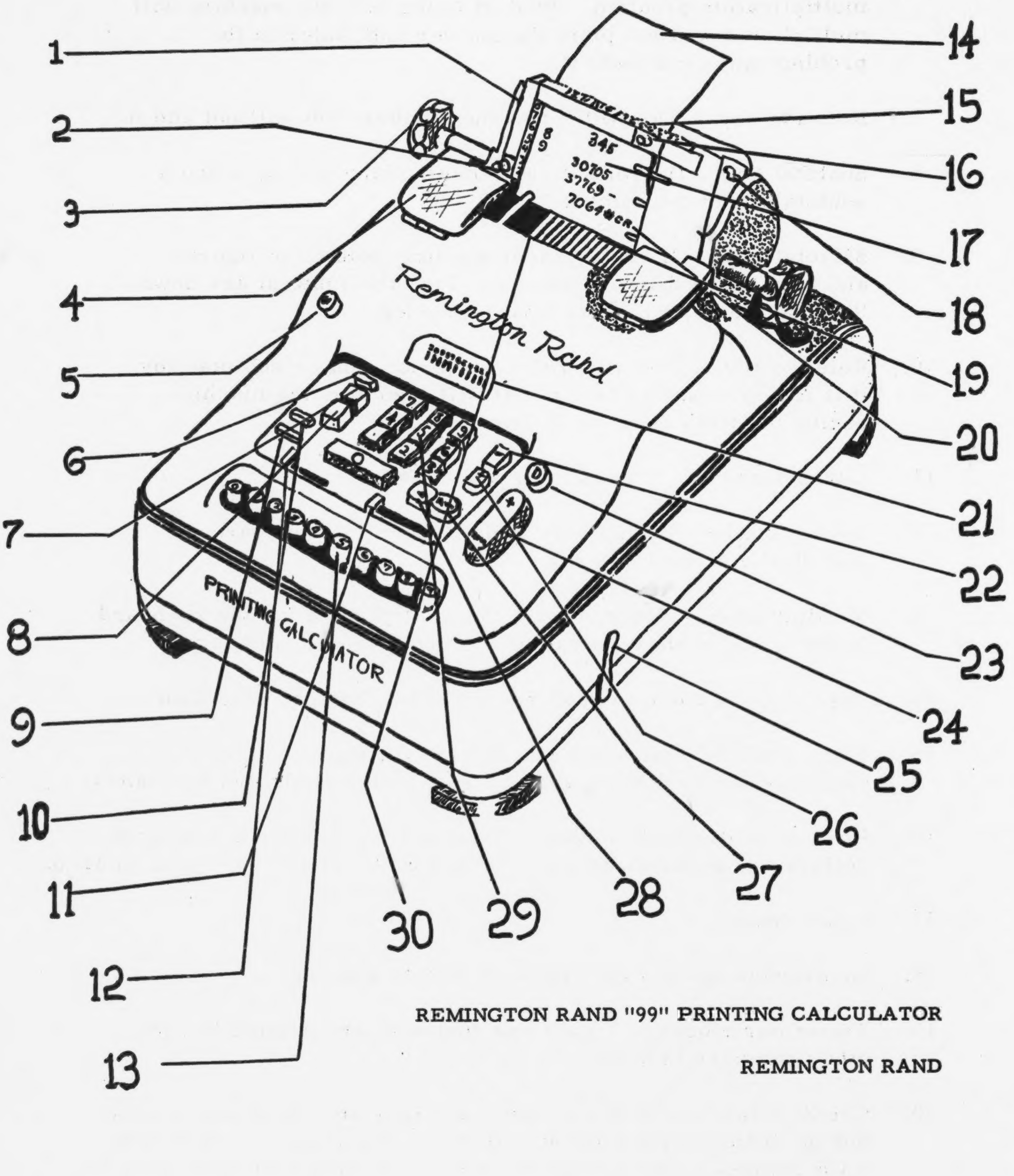
16. Horizontal decimal pointer. - This is a pointer for pointing off dollars and cents or decimals in the problem you have just entered.

17. Paper table.

18. Line-space lever - for single or double spacing.

19. Two-color ribbon. - Totals and subtotals are printed in red; other numbers in black.

20. Credit balance. - If you subtract a larger amount than you have put in, then you get a credit balance. It will print in red with a CR symbol. The symbol for a subtotal credit balance is SCR.


1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25
26
27
28
29
30
345
30705
37769 -
7064*CR.
Remington Rand
PRINTING CALCULATOR

REMINGTON RAND "99" PRINTING CALCULATOR

REMINGTON RAND

21. Dual column indicator. - These are the dials seen through windows. They show how many figures you have pressed on the keyboard.

22. Subtract key.

23. Decimal key - used for printing the decimal point in the quotient or the multiplier.

24. Add-total bar. - Depress this bar and the machine will print and add in a number. Hold it down for an extra "beat" and the machine will then print a total.

25. Memory lock lever.

26. Extend key.

27. Memory key.

28. Positioning key - used when multiplying by numbers larger than 10.

29. 10-key keyboard - similar to all 10-key machines.

30. Numbered type sectors. - The numbers are printed by these sectors. You will know which figures you have put in the machine.

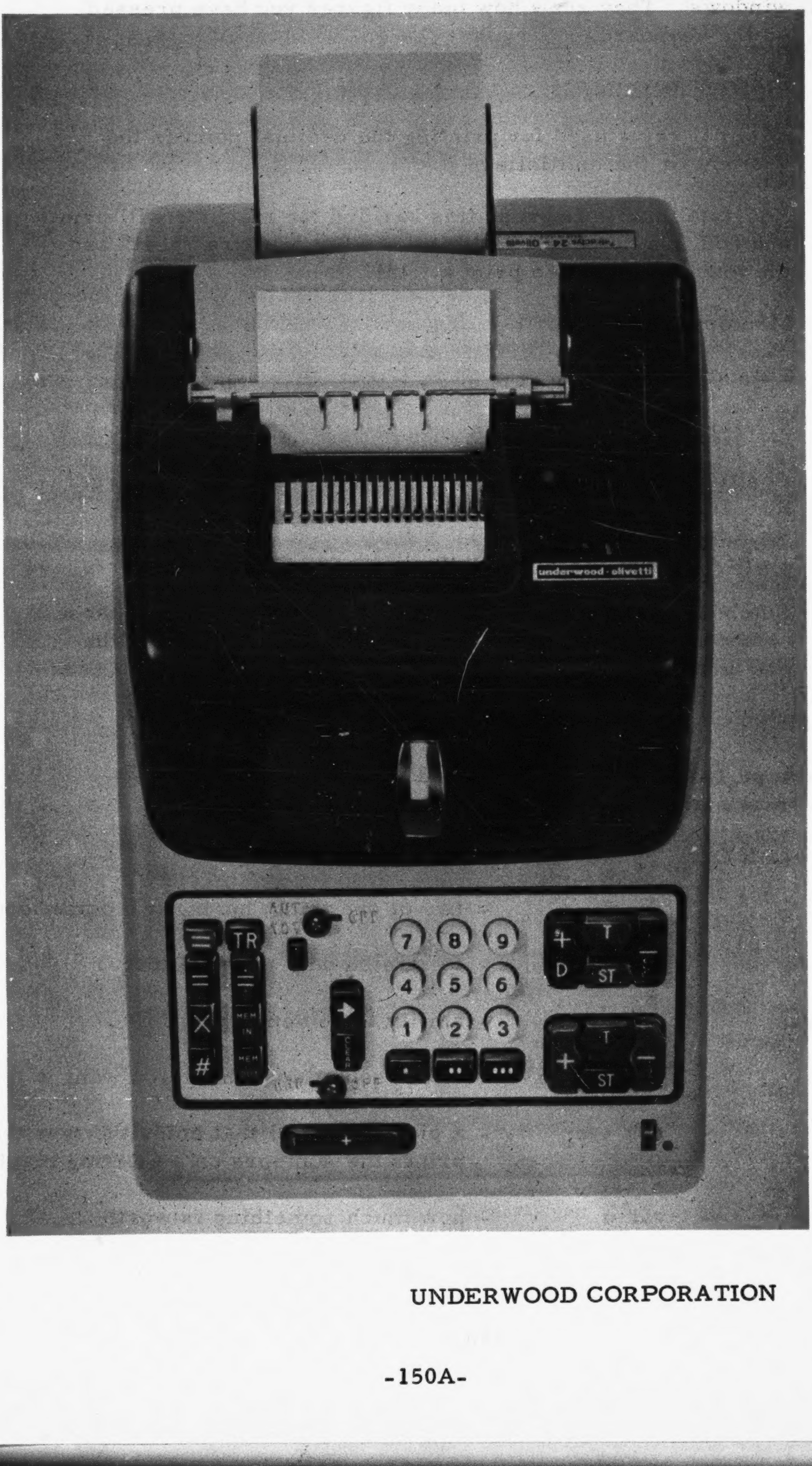
ASSIGNMENT:

Learn positions of the features and their use.
Learn as many names as possible.

VOCABULARY:

dual	-	dū′ əl	-	two of one thing; having two parts; double
extend	-	ĕks tĕnd′	-	to stretch out, to make longer
memory	-	mĕm′ ə rĭ	-	ability to remember
position (v.)	-	pō zĭsh′ ŭn	-	to put something where you want it
sector	-	sĕk′ tər	-	a piece of metal that holds the type that prints the numbers on a printing machine
value	-	văl′ ū	-	how much something is worth

UNDERWOOD-OLIVETTI CALCULATOR


underwood · olivetti
TR
MEM IN
MEM
CLEAR
7
8
9
4
5
6
1
2
3
+
T
D
ST
+
T
ST
−
#

UNDERWOOD CORPORATION

UNIT VIII - CALCULATING MACHINES

Remington 10-Key Printing Calculator - Operation of Special Parts

Lesson 9

OBJECTIVE: To learn about how some of the special parts are used.

INFORMATION:

1. Here is a new word: digit. What does it mean?

   A digit is a single (only one) figure--0, 1, 2, 3, 4, etc. The number 97 has two digits, 9 and 7.

   In the number 257, the digits are 2 and 5 and 7.
   The 2 is called the hundreds digit because it means 200.
   The 5 is called the tens digit because it means 5 tens, or 50.
   The 7 is called the units digit because it means 7 units or 7 ones.

   Therefore the number is read'two hundred and fifty-seven."

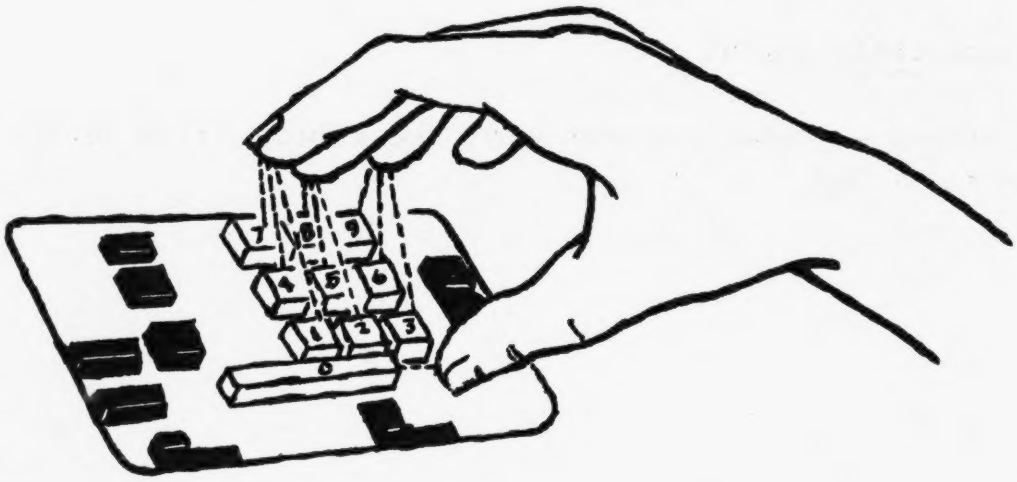
   Here is another word you should know: index. What does "indexing" mean about a machine?

   To index a number is to press down the keys for that number on the keyboard. The number is then ready to be added, subtracted, multiplied, etc.

2. Place the machine on the right and your copy on the left.
   Sit comfortably but keep good posture.

3. Clear the machine before beginning any problem.

4. Use the touch method for operating the machine.
   Why should the touch method be used?



The 4, 5, and 6 are the home keys, sometimes called guide keys. They are deeply grooved, so you need not look at them. The thumb is always used on the zero bar.

5. Enter the numbers on the keyboard in the same way that you read them. For example, to enter the number 456,
   depress 4 with first finger,
   depress 5 with the second finger,
   depress 6 with third finger.

   This is called indexing. The number is not printed yet. The number will be put into the machine and also printed when you touch the add-total bar with the tip of your little finger.

6. When you want a total, hesitate after the last number is indexed, keep the add-total bar depressed, and the total will be printed in red.

7. Perhaps you have indexed the number 45,678, and you are not sure what numbers you have entered. You may "erase" those figures and begin again. To do this, use the correction key, and the keyboard will be cleared.

8. Watch the little white dot in the dials. It will tell you how many digits you have indexed.

   If you indexed 7, 8, and 9, and it is only the last digit that is wrong, just depress the backspace key once and it will take out the last figure. You will see the white dot move 1 space to the right, and you will read 7 and 8 in the dials.

9. You know what the subtotal key does and the non-add key. You must learn the symbols for non-add and subtotal.

10. Let us see how key No. 9, the subtotal lock, is used. We will take a problem of adding single numbers.

    a. Print clear signal.

    b. Depress subtotal key and move the subtotal lock lever forward (up).

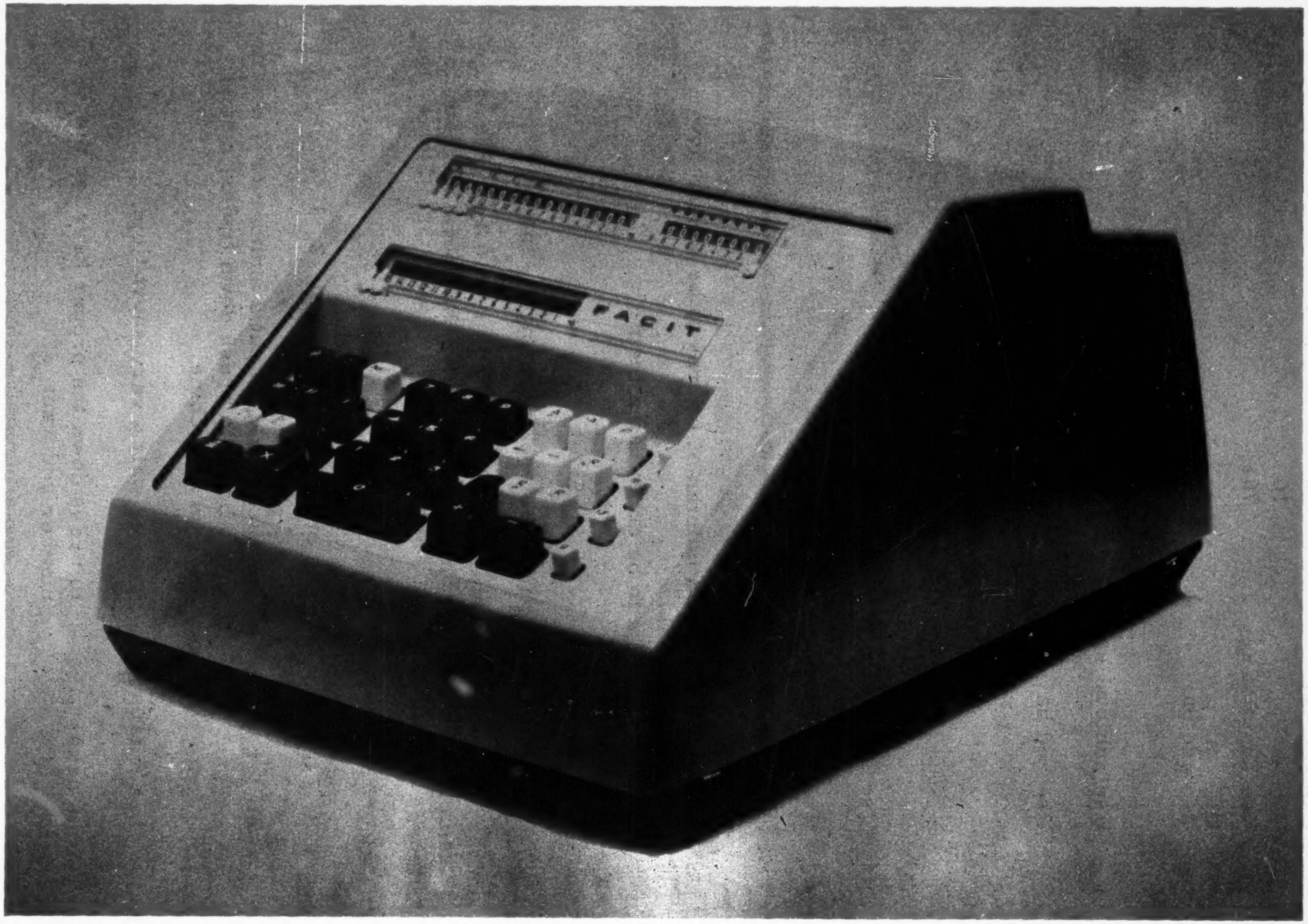
c.	Begin with	40
	Use add bar	28
		10
	Use subtotal key	78s
	Use add bar	17
		50
		39
	Use subtotal key	184s
	Use add bar	20
		67
		60
d.	Release subtotal lock	
e.	Use subtotal key	331s
f.	Use add-total bar for	331*

ASSIGNMENT:

1. After you have printed a column of figures to be added, how will you find the total?
   There are two things to be done; name them.
   a.
   b.
2. What is the first thing to do before operating the machine?
3. What is the rule for entering any figures in the 10-key calculator? Example: 201, 268. From which side does the operator read the figures?

VOCABULARY:

digit	dĭ′ jĭt	any one figure, like 0, 1, 2, 3, 4, etc.
enter	ĕn′ tẽr	in office work, to put a number or a notation into a book; to press down (index) number keys on a machine
hesitate	hĕz′ ĭ tāt	stop or wait a very short time
index	ĭn′ dĕks	to press down the proper keys for the number you want



FACIT ELECTRIC CALCULATOR

FACIT-ODHNER, INC.

UNIT VIII - CALCULATING MACHINES

Remington 10-Key Printing Calculator - Repeated Addition — Lesson 10

OBJECTIVE: To learn how to do repeated addition, and then read the tape.

INFORMATION:

Below is a reading of a tape taken from the Remington "99" Printing Calculator.

```
                *
               137
    4          256
               423
    3          189
               306
              2457 *
```

Can you tell how you got an answer of 2457 by looking at this tape?

What do the 4 and 3 tell you?

Let's look at the following tape, It will tell us what actually happened in the machine.

The tapes SHOW US WHAT THE OPERATOR and the machine did.

```
137
256
256
256
256
423
189
189
189
306
---
```

Index and print 137.

Index 256. Move AUTO key to the left.
Depress the 4 key. (This will multiply 256 X 4.)

The 4 is printed at the left and 256 on the right. This means 256 was added in 4 times.

Complete the problem.

Now what has happened?

1. The short tape tells you that 137 has been added in one time, 256 has been added in 4 times, 423 one time, 189, 3 times, and 306, one time.
2. Press down the total key to make a blank space.
3. Hold down the total key for another "beat" to obtain the total. (If you hold it down any longer you will get "clear" marks on the tape.)
4. Add the figures as they are on the second tape and see if the machine added right.

SUMMARY:

Do you wonder why you had to use the AUTO (means automatic) key?

Well, let's see what happens if we leave the AUTO key to the right.

Clear the machine.
Index 256 and push the 4 multiply key.

The machine multiplied 4 times but they gave you a total when you did not want one. The auto key must be to the left.

ASSIGNMENT:

Do the following problems. Use the non-add key for numbering. Work the problems both ways: first add over and over; secondly, use the multiply key.

171	2 x 891	8 x 106
4 x 326	8 x 108	3 x 321
5 x 201	981	406
628	9 x 98	510
3 x 182		2 x 891

VOCABULARY: None

UNIT VIII - CALCULATING MACHINES

Remington 10-Key Printing Calculator - Repeated Subtraction

Lesson 11

OBJECTIVE: To learn to do repeated subtraction on this machine.

INFORMATION:

Can you think how you would subtract one figure from another on this machine?

We talked before about a credit balance. When would you get a credit balance? How will you know it is a credit balance?

In the last lesson, we learned how to do repeated addition; now let's think about repeated subtraction.

This means we want to subtract the same amount more than one time and do not want to index it each time. To do this we use the extend key, marked EXT (26). One important thing to remember is that we must release the EXT key before the last time the figure is subtracted.

We will do this problem:

45,678 minus 123, minus 25 four times, plus 156.
It is done this way:

	*
	45678
	123-
Index 25, latch EXT key, touch (-) key	25-
touch (-) key	25-
touch (-) key	25-
Release EXT key before touching (-) key	25-
	156
	45611*

The important fact to be remembered is that the EXT key must be released just before the last subtraction of the repeated number.

ASSIGNMENT:

1.	257	2.	879	3.	943
	14-		55-		32-
	14-		55-		60-
	14-		55-		60-
	25		24-		60-
			37-		60-
					60-
					125

VOCABULARY: None

10-Key Remington Printing Calculator - Decimals Lesson 12

OBJECTIVE: To learn addition and subtraction of decimals.

INFORMATION:

We know that in adding or subtracting on paper we must always keep the decimal points in a straight line, underneath each other. Let's add .57, .08, and .7864. Your answer should have a whole number, a decimal point, and 4 digits to the right of the decimal point.

Why did you point off 4 places?

Now to add on the machine we must do the very same thing. We must keep the decimals under each other properly. If you just put those numbers into the machine, you would have:

```
  57
   8
7864
```

Your answer will be wrong.

Now you add and subtract on a machine in exactly the same way as you do by hand. You must keep the decimals under each other. There are no decimal points printed on this tape; you must move the horizontal pointer to the place where you want the point to be. Do this before you begin your problem.

A rule for adding or subtracting numbers that have different numbers of decimal places is:

1. Find the number with the most digits in the decimal point.
2. Add zeros to the other numbers to make them the same length. This will not change their value. Take the same figures; index and print them. Your pointer will be in the number 4 position, because the longest decimal has 4 places. Now your tape should look like this:

```
5700
0800
7864
```

Use the same rule when you subtract.

You would use this very same rule for adding fractions.

First - change the fractions to decimals.
Second - find the longest decimal.
Third - add zeros on the right of the shorter decimals, so that all will have the same number of digits.

ASSIGNMENT:

Problems 16-20, page 5 in Student's Workbook.

First read Student's Manual, pp. 10-12, Addition and Subtraction of Decimals.
Note: Zeros before a decimal, as in .0065, are not indexed; they would not print even if they were.
Zeros inside a decimal number are indexed, of course, as in these numbers: 4.006, 30.07, .1075.

1.
.45
.5
.675
.5124

2.
.072
.0065
.3

3.
3.812
-2.06

4.
4.517
-1.02

5.
-51.72
48.25

6.
67.34
- .078

VOCABULARY:

properly - prŏ′ pẽr lĭ - correctly, in the right way

UNIT VIII - CALCULATING MACHINES

10-Key Remington Printing Calculator - Multiplication — Lesson 13

OBJECTIVE: To learn how to multiply on the 10-key calculator.

INFORMATION:

Let us think about the three parts of a multiplication problem:

456 x 9 = 4104

The number 456 is the multiplicand; 9 is the multiplier, and 4104 is the product, the answer.

Before you begin multiplying in the machine, look at the machine to see that:

1. the memory lock lever (25) is in the normal position (to the rear)
2. the extend (26) and subtotal (8) keys are in the normal or "up" position
3. the total control lever, marked AUTO (6), is to the right.

Procedure: (What does this mean?)

Print the clear signal.

Index 456 but do not print it.

Find the multiply keys.

The multiplier is 9, so depress the 9 multiply button firmly.

Your tape will look like this:

```
                                    *
     (Multiplier)        9         456    (Multiplicand)
                                  4104*   (Product)
```

Now when the multiplier has more than 1 digit, there is more to do.

First let us work this problem: 256 x 234

Look at this problem. First we multiplied by 4; then we moved to the left 1 place and multiplied by 3; then we moved to left 1 place again and multiplied by 2; then we added all the parts to get the answer.

$$\begin{array}{r} 256 \\ \underline{234} \\ 1024 \\ 768 \\ \underline{512} \\ 59904 \end{array}$$

What did we actually do when we moved over to the left? We multiplied 256 first by 4, then by 30, then by 200. Can you see this?

Now on a machine we must "move over" 1 place to the left also, the same as when working by hand. On the calculator the "moving over" process is done <u>before</u> the multiply key is pushed. This is done by using the positioning key (arrow) (28). What does "positioning" mean?

Procedure on machine for multiplying 256 x 234:

Index 256. Notice the white dot directly under the number 3 in the dual column indicator (21). This white dot shows that three digits have been indexed. We must move this dot to the left, once for multiplying by 30 (the 3 in 234) and once again for multiplying by 200 (the 2 in 234). To do this, depress the positioning key twice. If you have depressed the positioning key properly, the white dot should be under the number 5 in the dual column indicator. Now multiply, by depressing the multiply keys in the order in which you read the multiplier, 234. Depress the 2 firmly; after the motor stops, depress the 3 firmly; and then depress the 4.

Your tape should look like this:

```
                                  *
                2             256      (Multiplicand)
(Multiplier)    3
                4           59904*     (Product)
```

NOTE: This is the only type of machine where the multiplier figures are used from left to right.

To get into position for multiplying, depress the positioning key once for each digit in the multiplier minus 1.

Multiplier	**Depress the positioning key once for each of these digits, saying to yourself:**
56903	five--six--nine--zero
831	eight--three
4920	four--nine--two
5	(name of digit not said, because no depression is made for the first digit)

Multiplying decimals would be done the same way, but the operator would point off properly first with the horizontal pointer (no. 16).

ASSIGNMENT:

1. 139 x2	2. 254 x5	3. 239 x72	4. 723 x829
5. 4167 x4167	6. 183 x219	7. 92187 x 1278	8. 15407 x70518
9. 19444 x42350	10. 25 x25	11. 982 x839	12. 7584 x421
13. 9787 x189	14. 189 x91		

VOCABULARY:

normal	nôr′ măl	in the way it has been, in the usual way
procedure	prō sē′ dūr	the method of doing something, step by step
product	prŏ′ dŭkt	the answer to a multiplication problem

10-Key Remington Printing Calculator - Division — Lesson 14

OBJECTIVE: To learn how to do division on this automatic calculator.

INFORMATION:

What does "automatic" mean? What could it mean about dividing?

We are going to use the words "divisor" and "quotient" and "dividend" today. When we talk about dividing, what do these words mean?

Dividend is the number being divided.
Divisor is ________________________.
Quotient is ________________________.

If you do not know, be sure to look in the list of vocabulary words at the back of the book.

The quotient is the answer, but sometimes an answer does not come out even. There is some left over, and that is called the remainder.

Dividing is very easily done on the Remington 99. This is a short name for this machine. It is a Remington Rand model "99".

Work the following: 2376 ÷ 21:

Procedure:

1. Index and print 2376. How do you print?

2. Index the divisor 21.

3. Now find where the first digit in the dividend is.

   To find this, look at the numbered type sectors. Which sector is under the 2 in 2376? The "2" is the first figure on the left. It is the sector numbered 4. This means that the "2" in 2376 is in the fourth position. The first number in the divisor (21) must be under the first number (2), or number 4 sector. Right now the white dot says the 2 in 21 is in the same position as the 7 in 2376. What will we do? How can we get the 2 in 21 under the 2 in 2376?

Depress the positioning key two times. Then the white dot will be under the 2 in 2376, and also under the 4 in the Dual Column Indicator. This is right, isn't it? The dividend has 4 digits.

4. Depress the divide key (5) marked DIV. The answer appears vertically on the left side and the remainder, in red, on the right with a total asterisk.

   What is an asterisk?

A simple rule for division is:

Index and print the dividend.
Index the divisor.
Be sure the first number (on the left) of the divisor is directly below the first number (on the left) of the dividend.

ASSIGNMENT:

1. 144 ÷ 10 = ____________________
2. 156 ÷ 12 = ____________________
3. 12345678 ÷1120 = ____________________
4. 1254 ÷ 24 = ____________________
5. 1565 ÷ 12 = ____________________
6. 125 ÷ 5 = ____________________
7. 236 ÷ 240 = ____________________
8. 711 ÷ 9 = ____________________
9. 169 ÷ 13 = ____________________
10. 6241 ÷ 79 = ____________________
11. 1218 ÷ 3 = ____________________
12. 78 ÷ 365 = ____________________

VOCABULARY:

remainder - rē mān′ dər - what is left over

UNIT VIII - CALCULATING MACHINES

10-Key Remington Printing Calculator - Division of Decimals

Lesson 15

OBJECTIVE: To learn how to divide numbers which have decimals, on a 10-key calculator.

INFORMATION:

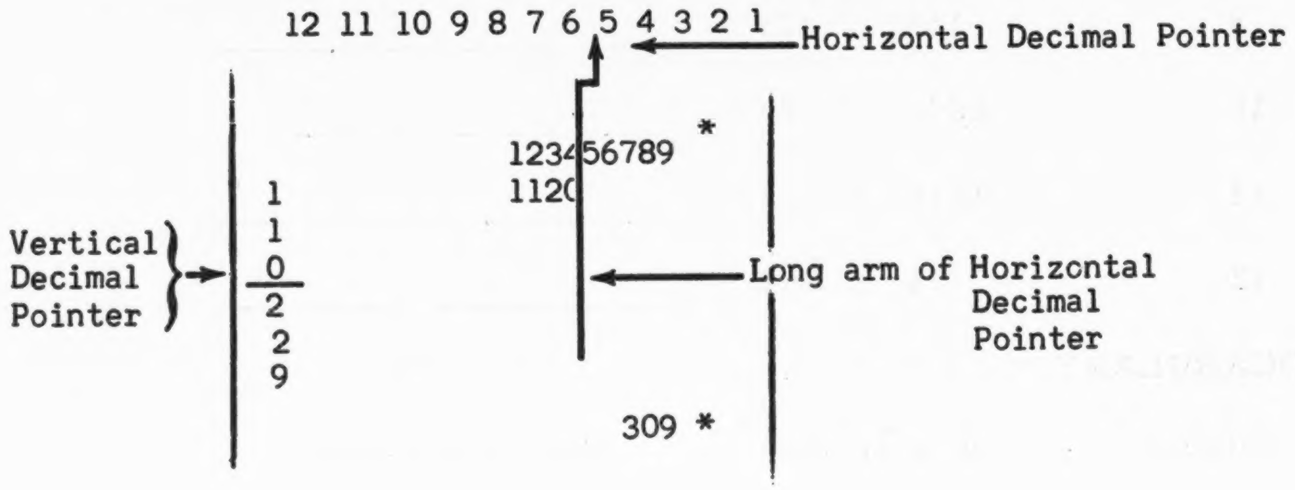
How do we know how many places to point off in dividing decimals?

The rule to know is: the number of decimal places in the dividend minus the number of decimal places in the divisor gives the number to be pointed off in the answer: Example:

1234.56789 ÷ 11.20 (3 decimal places in quotient)
5 places 2 places

Remember the rule above and we will go through the problem:

1. Index and print the dividend.
2. Move the horizontal decimal pointer to the correct decimal point - between the 4 and the 5 in the dividend.
3. Index the divisor.
4. Depress the positioning key 5 times to get the first 1 in 11.20 directly under the 1 in 1234.56789.
5. Now set the vertical decimal pointer (no. 2) to 3 on the vertical scale. (See above-3 places in answer.)
6. Depress the DIV key. Your answer will appear vertically on the left. Your tape will look like this:


12 11 10 9 8 7 6 5 4 3 2 1
Horizontal Decimal Pointer
123456789 *
1120
Vertical Decimal Pointer
1
1
0
2
2
9
Long arm of Horizontal Decimal Pointer
309 *

ASSIGNMENT: Find the quotient for the following problems. Be sure to point each off correctly.

1. 8.4 ÷ 21
2. 9.9 ÷ 3.3
3. 54.8 ÷ 26.1
4. 98.3 ÷ 10.9
5. 86.4 ÷ 1.1
6. 834.6274 ÷ 3.456
7. 131.32682544 ÷ 8976.543
8. .98342152678 ÷ .2879543
9. .34165318947 ÷ .62876
10. .21992248796 ÷ .0546894

VOCABULARY:

appear - ă pēr′ - show up, come into sight

UNIT VIII - CALCULATING MACHINES

10-Key Remington Printing Calculator - Dual Addition or Subtraction

Lesson 16

OBJECTIVE: To learn how to add or subtract two columns of figures at the same time.

INFORMATION:

Sometimes it is desirable to add two columns of figures at the same time. Can you think of a time when it would save time to add two different columns? Here is a problem:

A bookkeeper needs to know how long and where one employee worked, and how much he was paid for each job. What does gross pay mean?

Find the total number of hours worked and gross pay of an employee #347.

Job #	Hours	Wages
122	7	$14.59
122	8	16.88
141	4½	9.91
141	6¼	13.60
150	9	17.75
151	3¾	7.89

Step 1. Index employee #347, depress non-add key, depress add-total bar.

Step 2. Index 7 (hours), depress positioning key (28) and memory key (27) simultaneously; then depress add-total bar.

Note A. When the positioning key and memory key are depressed together, the indexed number is positioned at the extreme left. Use your right-hand pointer finger on the positioning key and your right-hand middle finger on the memory key.

```
                        *
                    347v
 7
                    1459
 8
                    1688
 45
                     991
 625
                    1360
 9
                    1775
 375
                     789
385, 000, 008, 062*
```

Step 3: Index (wages) 14. 59 in the usual manner for addition, and depress add-total bar. This number is positioned, as usual, at the extreme right.

Note B. The hours are printed on the left and the wages on the right, so that the "99" Calculator is in effect operating as two separate adding machines.

Step 4. Enter 8(hours)as in Step 2, and (wages) 16. 88 as in Step 3.

Continue in this manner until all hours and all wages have been added.

To obtain the total, depress add-total bar for two cycles.

How many hours did employee #347 work in all? What were his total wages?

ASSIGNMENT:

What would happen if you tried to do this type of problem without pressing the memory key?

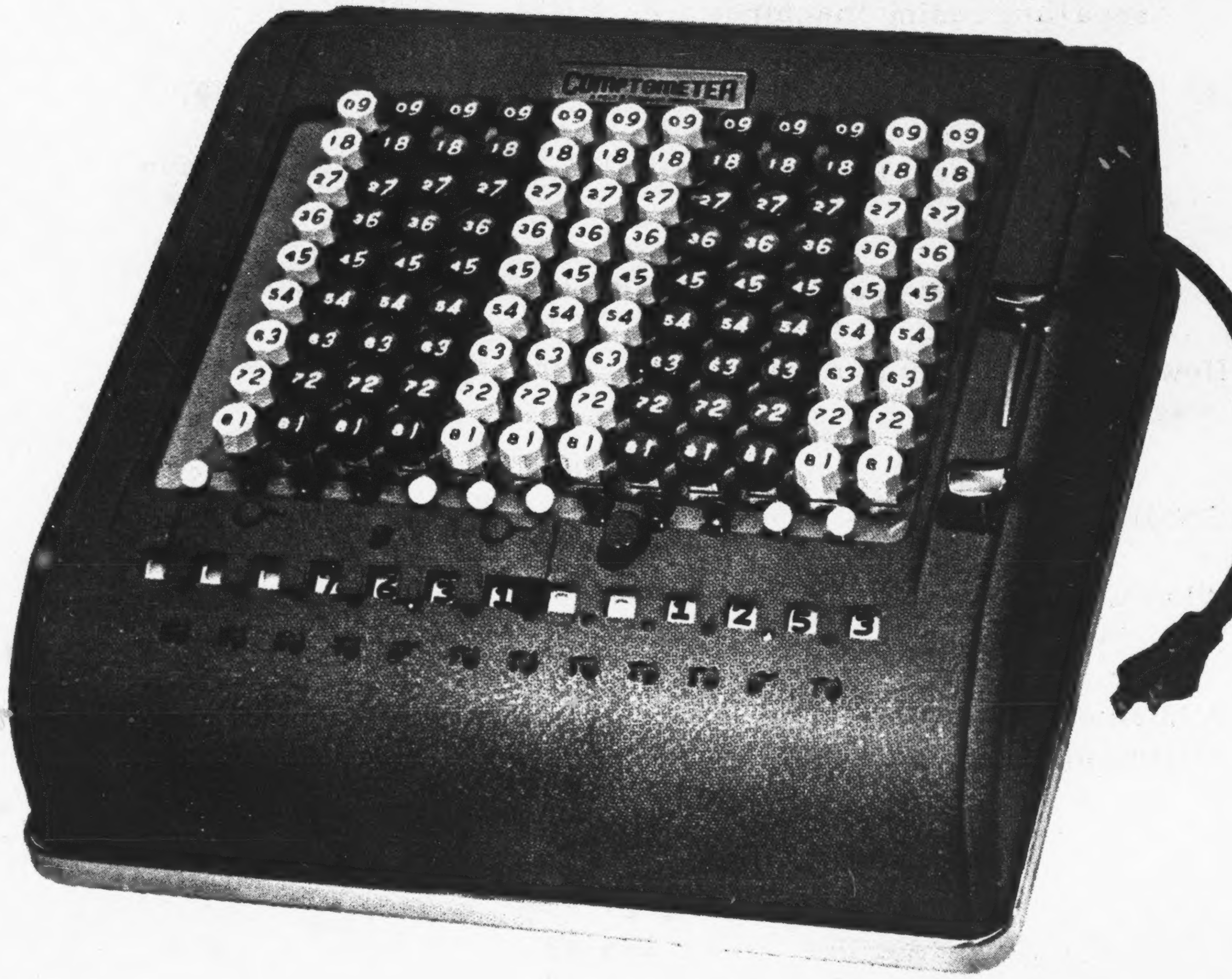
A businessman wants to know the total cost price and the total selling price of some materials. Find the totals of the following:

Cost Price	Selling Price
$ 19. 75	$ 27. 65
125. 35	175. 49
. 37	. 52
6. 41	9. 00

VOCABULARY:

desirable	- dē̍ zīr′ ȧ bl	- pleasing, agreeable, in the way you want it
gross	- grōs	- whole, before anything is subtracted. Gross pay is one's pay before any amount (usually taxes) is deducted from it
simultaneously	- sī mŭl tā′ nē ŭs lĭ	- happening at the same time

COMPTOMETER


COMPTOMETER

FELT AND TARRANT MFG. CO.

UNIT VIII - CALCULATING MACHINES

Key-Driven Calculators - General Information — Lesson 17

OBJECTIVE: To learn about key-driven calculators.

INFORMATION:

These machines do not have an add bar nor a motor bar.

They are not listing machines, as they have no tape.

They have only a set of dials where the answer is shown. This answer is gotten by just depressing the keys.

If you depress 33, the same figure will show in the dials. Then depress 22, and their sum, 55, will be in the dials.

This was not done by using an add bar; the keys being depressed caused the addition. You may enter any number of amounts, and the answer will keep adding in as you depress the keys.

This is the reason it is called a key-driven calculator.

A key-driven machine always has a full keyboard.

A good operator can work very fast on a key-driven machine because there is no time lost pushing down an add bar.

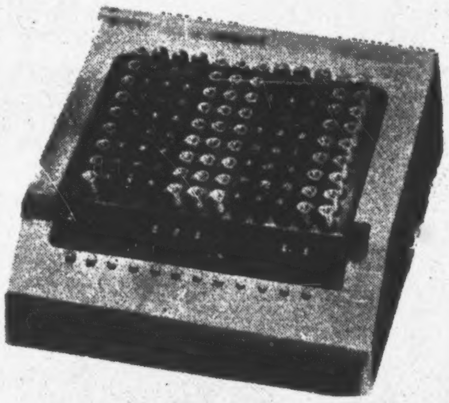
For adding, you use the touch system. The home keys are 3-3 of the first two rows on the right. The first two fingers of the right hand are used. They never go above the 5 row. If you want to add 6, you would depress the 3 two times.

Multiplying can be done easily on this machine. Subtracting and dividing are done by using the small numbers on the keys.

Key-driven machines may have from 8 to 14 columns of figures.

VOCABULARY:

Comptometer -komp tom ə ter - a key-driven calculator



Victor Comptometer

Victor Comptometer Corp.

ODHNER 10-KEY CALCULATOR

ODHNER
R
C
7
8
9
4
5
6
1
2
3
0

FACIT - ODHNER, INC.

UNIT VIII - CALCULATING MACHINES

Hand-Operated Calculators - How to Use Them **Lesson 18**

OBJECTIVE: To learn about hand-operated machines.

INFORMATION:

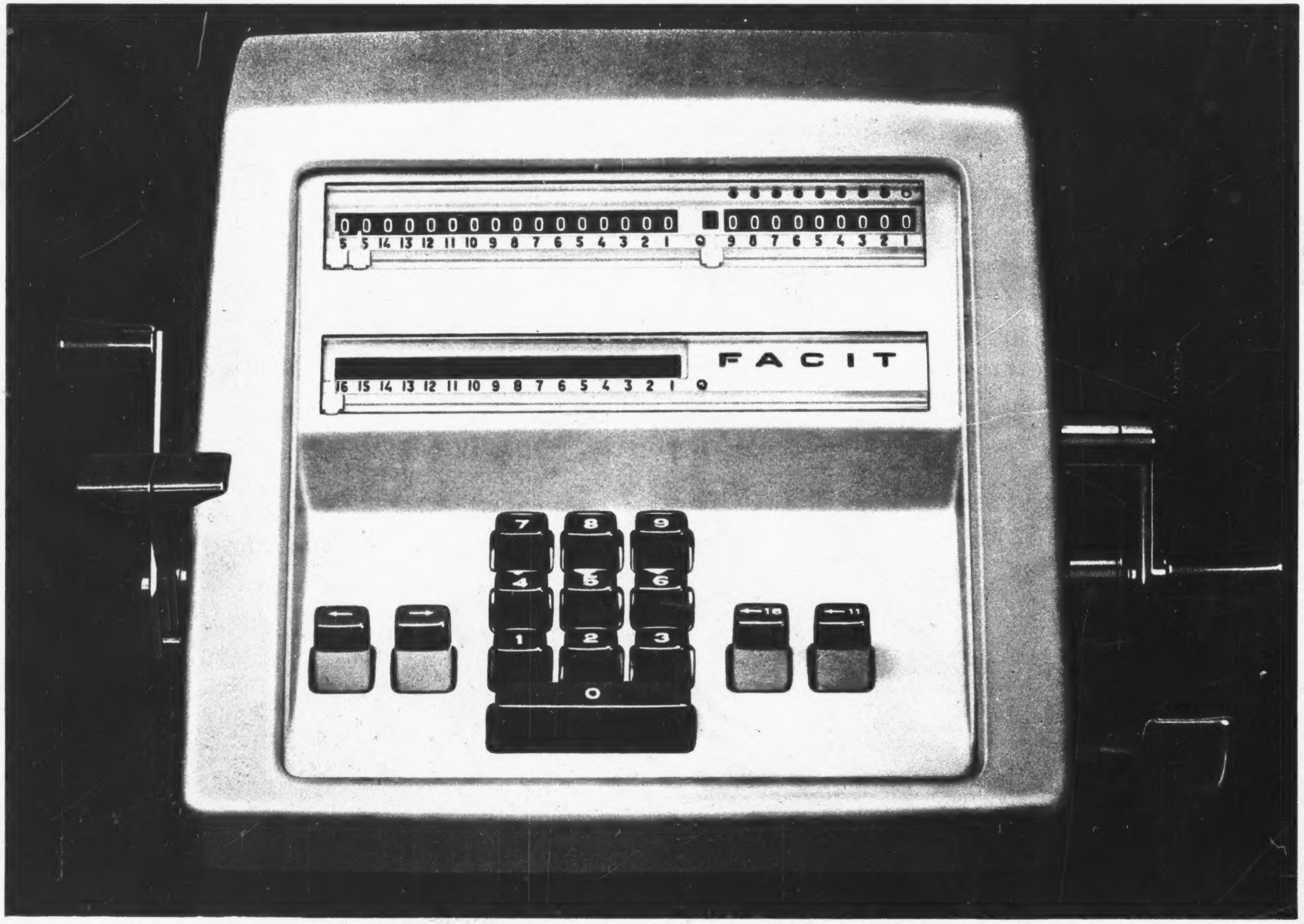
Most electric machines have a corresponding manual machine, just as with typewriters. An electric machine is, of course, much easier to use than a hand-operated machine.

If you go to a new position and are given any machine that does not have an electric cord, it will have a handle to pull forward instead. The handle takes the place of the motor bar. There is one exception - the manual Comptometer has no handle - it is a key-driven machine. You can depress the keys, then pull the handle toward you, and the numbers will be printed on the tape or will show in the dial.

Notice the hand-operated Monroe Calculator and the Odhner Calculator. They are small, light machines and easy to use. You would be likely to find such machines in small companies. Exactly the same kinds of problems can be done on them as on the corresponding electric machines.

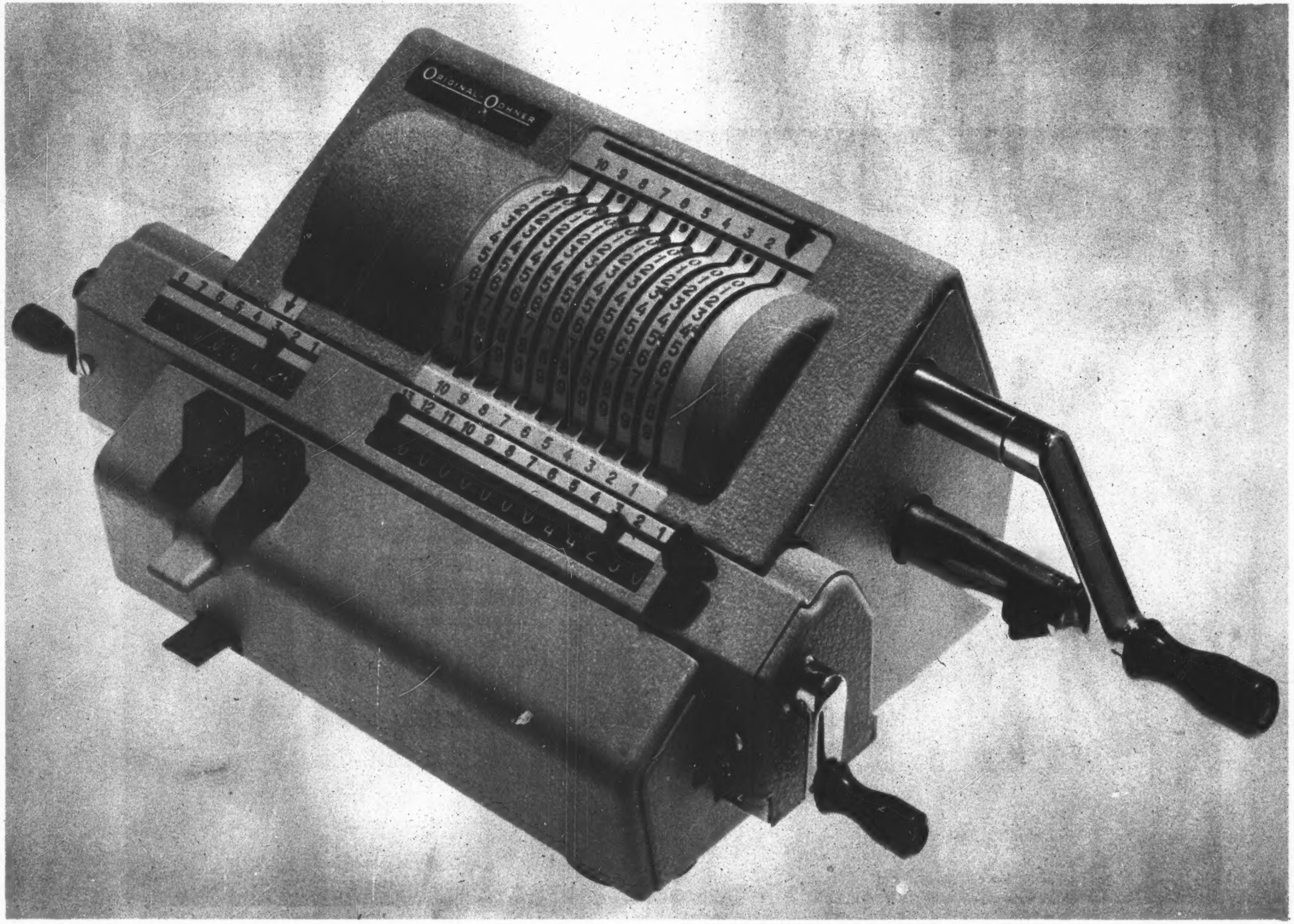
VOCABULARY:

correspond - kôr ə spŏnd′ - be like another, match another


FACIT
7
8
9
4
5
6
1
2
3
0

FACIT MANUAL CALCULATOR

FACIT-ODHNER, INC.


ORIGINAL-ODHNER

ODHNER MANUAL CALCULATOR

FACIT-ODHNER, INC.

UNIT VIII - ACHIEVEMENT TEST

1. Why is a key-driven calculator called by this name?

2. Do you use the touch method on a key-driven calculator?

3. What is the most important difference between an adding machine and a calculating machine?

4. What is the difference between a 10-key listing-adding machine and a 10-key printing machine?

5. When is it an advantage to use a rotary calculator rather than any of the other machines we have talked about?

TRUE OR FALSE

____ 6. A listing machine must have a tape on it.

____ 7. A rotary calculator will work faster than a printing calculator.

____ 8. It is easier to prove your work on a listing machine than it is on a rotary machine.

____ 9. All calculators have full keyboards.

____ 10. The touch method is used on the Remington 10-key calculator.

____ 11. When a number is indexed on a calculator, it is printed on the tape.

____ 12. An important key to use when subtracting and multiplying is the positioning key.

Complete the following problems on each type of adding machine and calculator.

1. MULTIPLICATION

a. 41 x 32
b. 62 x 17
c. 49 x . 61
d. 184 x 39
e. $21. 69 x 1. 15

2. ADDITION

a.
$. 21
. 49
. 82
. 54
. 31

b.
$ 3. 95
4. 98
2. 55
43. 21
97. 79

c.
$. 10
111. 10
100. 01
799. 88
. 22
. 33
842. 11

d.
$. 98
. 76
. 42
. 31
. 01
. 08
. 12
. 77

e.
$ 2. 20
8. 99
22. 14
367. 23
. 76
124. 11

3. DIVISION

a. $37. 54 ÷ 3. 00
b. $735. 29 ÷ 26. 70
c. $46. 82 ÷ 44
d. $13. 92 ÷ . 07
e. $827. 39 ÷ 345. 11

d. SUBTRACTION

a.
$31, 758. 37
-21, 957. 64

b.
$7, 606. 96
-6, 579. 85

c.
$9, 834.38
- 785.85
- 478. 83
- 111. 05
- 101. 05

d.
$87, 234. 65
- 1, 256. 60
- 1, 234. 56
- 1. 99

e.
$491. 02
- 12. 12
-112. 21
-221. 44

f.

6521
235489
30000
1470
852
481562
7700
6355
11220
1364
45
125
500
9
8529
8175
4325
759
4868
13726
75
61547
275846
3827
13463
998
5847
963
6282
84620
7500
7832
70
52648
100
9393
1545

g.

4849
424
3951
5867
10736
559
4070
4515
13670
79281
4
4235860
200
84136
70903
367420
41876
61
637
188
3734
3852
1245
2169
75
100
10483
12663
1057
1367
5843
30076
951
78652
357
8815
4625

OFFICE PRACTICE

Practice Work for the Remington 10-key Calculator

Directions: Put your name and the date on the top of each tape.
Put the page number on your tape and the number of the problem if it is given.
At the end of each class, put your tapes in the Office Practice basket.

Always CLEAR your machine before each problem.

1. Use the Adding Machine Kit (student manual and workbook).
   Pages 6-9 in the Manual, 3 times each.
   Read the directions in the manual BEFORE doing the problems in the workbook. Write your answers in the workbook. Do each problem once.
   Pages 10-17, exercises 1-8 in the Manual. Check your tapes carefully.
   In exercise 6, be sure to check the extensions and total on each invoice, as there may be mistakes.
   Page 22 in the Manual, exercise 11.
   Page 24 in the Manual, exercise 12.

2. Use Student Machine Station Manual and Workbook for Model "99" Calculator
   Look at pages 1(d) and 1(e) carefully in the Manual.
   Workbook--write your answers in the workbook. Check your tapes carefully.
   Pages 3-4, exercises 1-18, once each.
   Pages 5, 6, 7, and 8, once each.

3. Test--use the book called How to Use the Adding and Calculating Machines, 2nd edition, by Walker, Hanna, & Roach.
   Do not write in this book.
   Page 98, 12-20; Page 99, Part II, 1-5 & 16-20; Page 118, 1-5

4. Practice problems

   Use the book How to Use the Adding and Calculating Machines, 2nd edition

   Directions: Do each problem once. Check your tapes carefully.
   Write your answers on a separate answer sheet.
   Be sure to attach your tapes to it.

Office Assignment No. 122
Office Assignment No. 124
Unit 2, Lesson 6, 1-20
Office Assignment No. 214
Unit 2, Lesson 9, 1-5
Unit 2, Lesson 10, "Improving Your Skill (2)"
Office Assignment No. 311
Office Assignment No. 223
Office Assignment No. 226
Unit 2, Lesson 16, 8 invoices
Office Assignment No. 231
Office Assignment No. 307

5. Test--Office Assignments Nos. 211, 224, and 312
Page 222 (page 219 in 1st edition) Part V, 1-5
Write your answers on a separate paper and attach your tapes.

OFFICE PRACTICE — Advanced Adding and Calculating Machine Office Practice

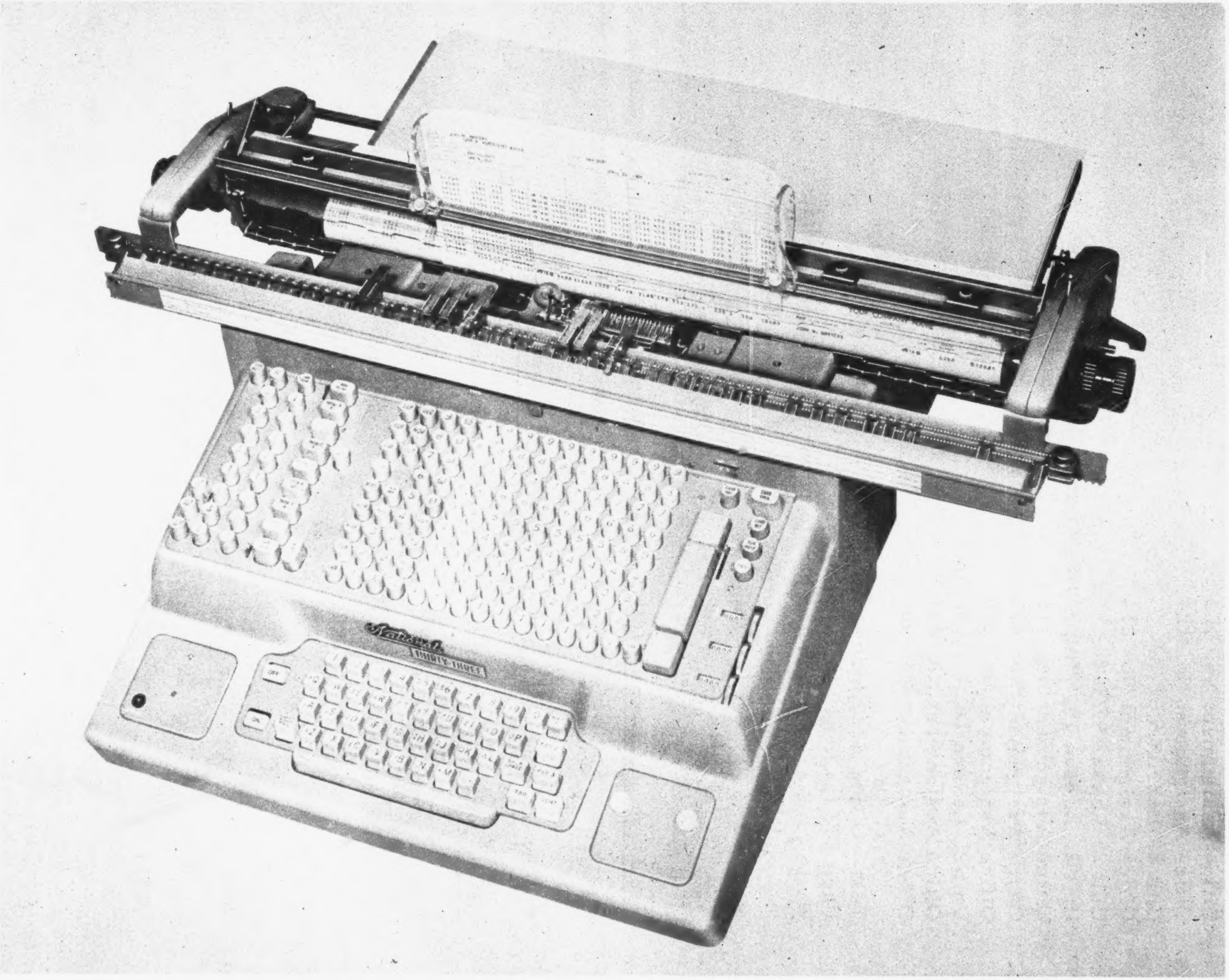
Use Machine Office Practice Set by Peter L. Agnew

Do each job once.

Follow the directions in the booklet, Job Instructions.

Check your tapes carefully. Be sure your work is accurate.

Put all your answers on a separate answer sheet and attach the tapes.


National
THIRTY-THREE

BOOKKEEPING MACHINE NATIONAL CASH REGISTER COMPANY

UNIT IX - BOOKKEEPING MACHINES

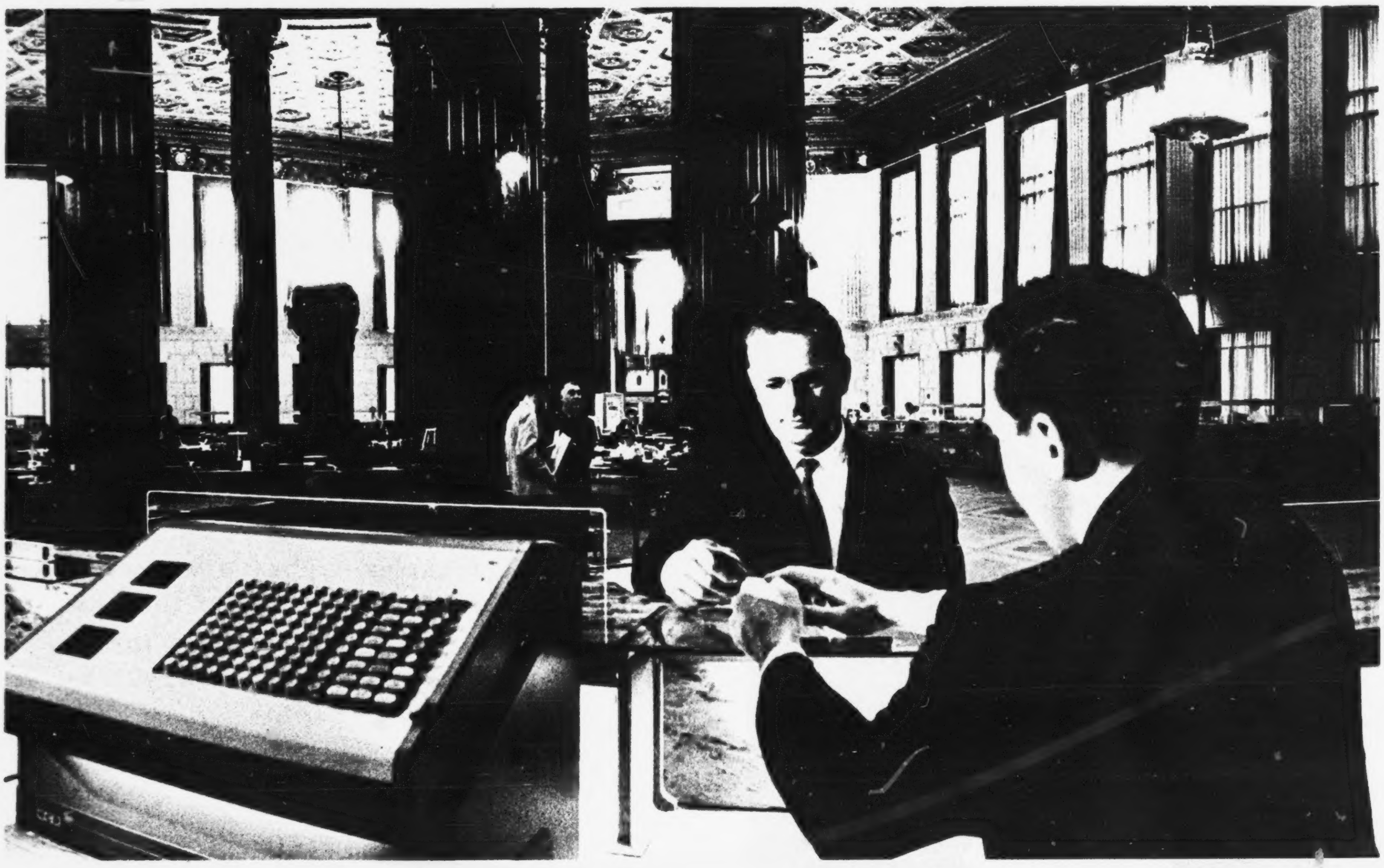
What Bookkeeping Machines Are — Lesson 1

OBJECTIVE: To learn what kinds of jobs the bookkeeping machine can do.

INFORMATION:

Bookkeeping machines are for keeping accounts. You have learned in your courses that a bank account is a record of how much money a person has put into the bank and taken out.

A person who has an account with a bank is called a depositor. When a depositor deposits more money, or writes a check to take some money out, an operator working in the bank will work on a bookkeeping machine and will either add some money or subtract some out. This is a record of that person's account. If the operator has used the correct keys and buttons, the bookkeeping machine will add the amount of the deposit or subtract the amount of the checks and give a new total on that card. That total tells how much money that person has right now. (This means as of the day the work has been done.) All the transactions that have taken place are recorded on this one sheet.



A teller in this bank can show the customer what transactions have taken place on his account and what the balance is.

Because this record now tells everything that has happened in the person's account, it is very easy to see it all quickly.

The bookkeeping machine has made all the necessary additions and subtractions and has given the right answer. It has done this because the operator - who could be you - has known what she needed to do. She knew that she added some figures, and at other times she subtracted.

Here is a rule which is extremely important for you to remember:

You must know why you add and subtract, because A machine is only as accurate as the operator.

Now that the record is completed for that date, it is not necessary for any employee to remember what figuring was done for any person. An employee could be wrong. But the machine total is correct. It is easy to find and easy to read.

Transferring data from several sheets to one total.

There are many sizes of bookkeeping machines, from a small, 10-key machine to a large one with 14 column of keys.

Some of the machines have a typewriter keyboard as well as a numerical keyboard.

In some types of work, the operator might need to type names or other information at the same time she is working with the figures.

These machines are used extensively in the smaller banks. They are used many times to keep a record of the payroll, or the number of hours that men use to do a certain job in a factory.

ASSIGNMENT: True or False

____ 1. Bookkeeping machines keep records about money.

____ 2. Records about money also means records about numbers or figures.

____ 3. A bookkeeping machine often makes an error.

____ 4. A machine will print the same keys that the operator depresses.

____ 5. When the operator is keeping records about money, she would never need to type at the same time.

____ 6. A bank account is a record kept about money.

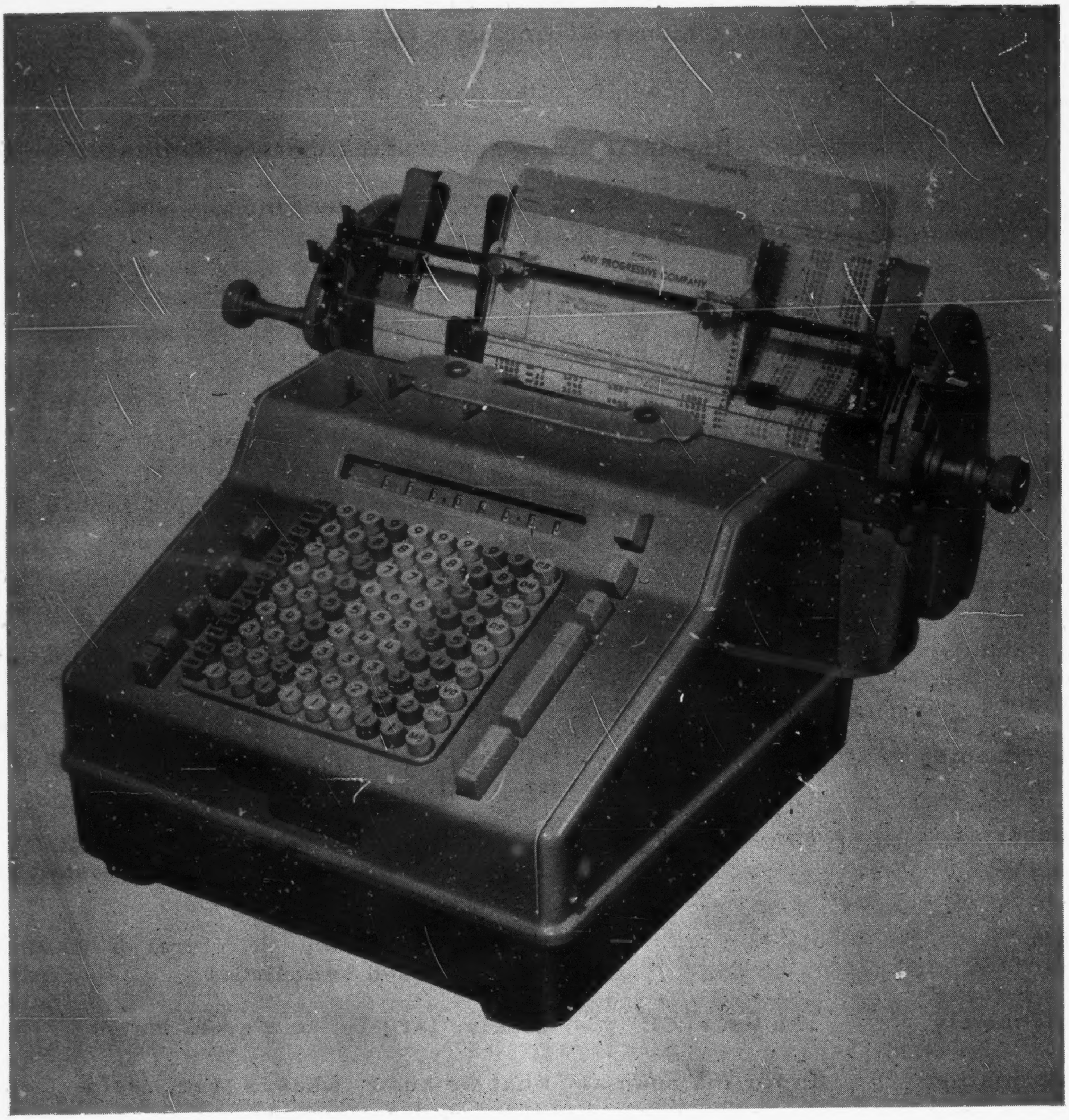
____ 7. A "record" about money, an "account" about money, and an "explanation" about money, all mean the same thing.

____ 8. Suppose you have a balance of $100.00 in the bank, and then write a check for $5.00. Your balance will be $95.00. The bookkeeping machine will put this new balance on your record so it can be read.

VOCABULARY:

account	- ȧ kount′	- a record of money received and paid out
balance	- bă l′ əns	- the amount left in an account
bookkeeping	- bo͝ok′ kēp ng	- keeping an accurate record of business transactions
concern	- kŏn sûrn′	- 1. a business company 2. concern oneself - to be interested in, to care
data	- dā′ tȧ	- facts, information (the plural of "datum," which is used very little)
extensively	- ĕks tĕn′ sĭv lĭ	- widely, largely, to a great extent
information	- ĭn fôr mā′ shŭn	- what we know, what is true, facts
record (n.)	- rĕk′ ẽrd	- any information that is written down and kept
various	- vâr′ ĭ ŭs	- more than one, different
teller	- tĕl′ ər	- a person who works in a bank receiving, paying, and counting money
transaction	- trăn zăk′ shŭn	- a piece of business

POSTING MACHINE



NATIONAL CASH REGISTER COMPANY

UNIT IX - BOOKKEEPING MACHINES

What Posting Means — Lesson 2

OBJECTIVE: To learn what posting means.

INFORMATION:

You probably have seen the word "post" used in connection with bookkeeping.

To post is to transfer an amount from one record to another - to enter a piece of information where it needs to be in the books.

Nowadays, much posting is done on bookkeeping machines. The operator can take facts and figures from several different places and put them into the machine. The machine not only prints the information, but adds and subtracts figures wherever necessary and gives a correct answer.

When we speak of a posting machine, therefore, we mean a machine that prints up the information we need and also performs the arithmetic that needs to be done.

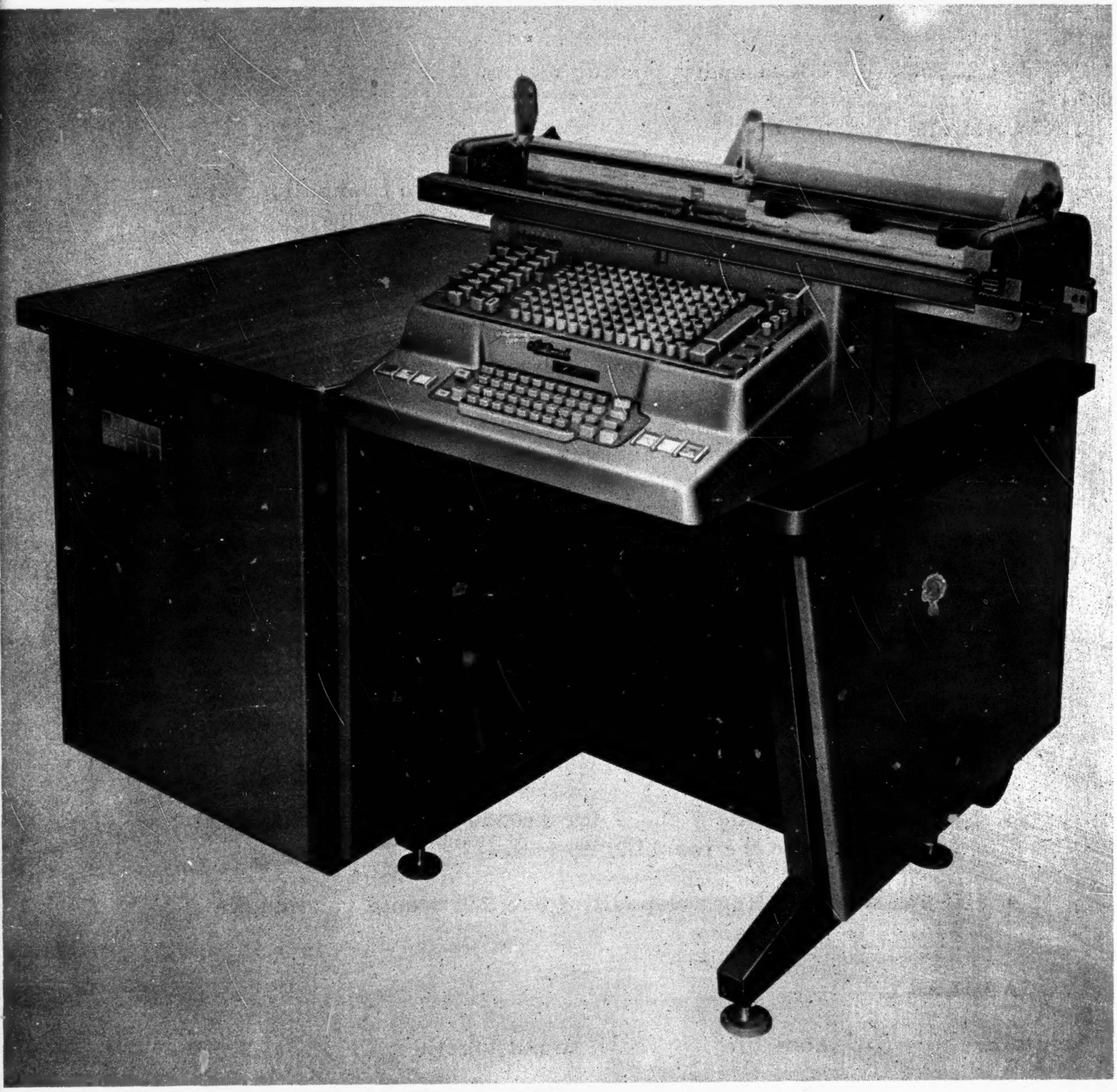
ASSIGNMENT:

1. What does "posting" mean?
2. Is the posting machine used when working with money?
3. If you were posting a check for $10. 00 on my account, what would you have the machine do with it?
4. If you were posting a deposit of $46. 39, would you add the $46. 39 to the balance?

VOCABULARY:

combine	- kŏm bīn′	- to put together
post	- pōst	- transfer an amount from one record to another
source	- sôrs	- a person, book, or statement that supplies information; also a beginning, a place where something starts

BOOKKEEPING MACHINE



NATIONAL CASH REGISTER COMPANY

Posting Machines - General Information   Lesson 3

OBJECTIVE: To learn some facts about posting machines.

INFORMATION:

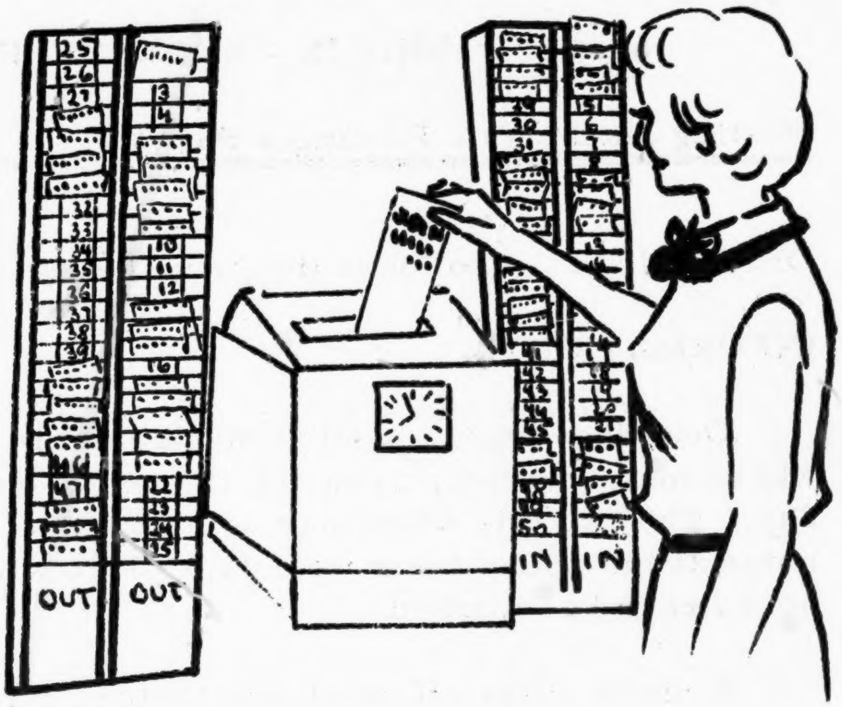
1. All posting machines are printing machines.
2. The carriage on all machines moves automatically.
3. The carriage on all machines opens and closes automatically with the proper entry.
4. Although the carriage moves, on most machines it can be locked into one place and the machine used as an adding machine.
5. All posting machines have a tape which records the entries for proof. A card will be inserted for each customer who has made a transaction that day.
6. The cards will be kept as the permanent record.
7. The proof on the tapes can be thrown away, 30 or 60 days after the work has been completed. The length of time for keeping the tape varies according to what the office decides.
8. Sometimes the tape is wide (perhaps 24 inches wide) and is double. Then one paper is a carbon of the other.
9. Very often the account card is inserted over the wide tape. This is the most efficient way of keeping a proof of the transaction, because all the proper data has been collected together in such a way that it can be transferred all at one time by the machine to both the proof record and the permanent record.

ASSIGNMENT:

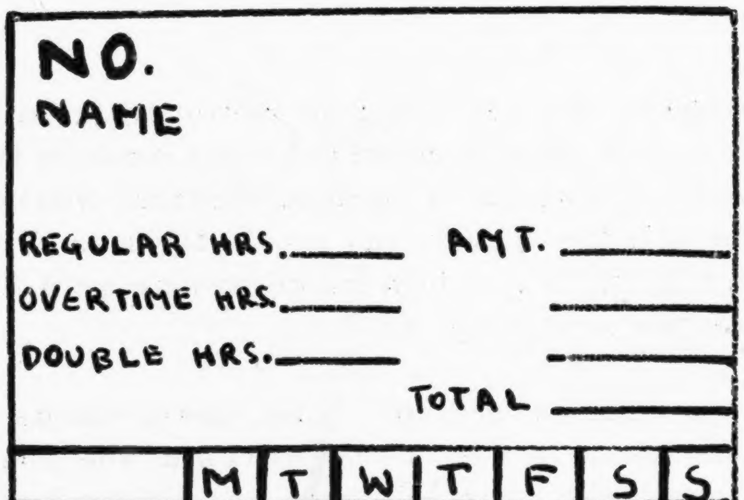
1. What is a permanent record?
2. What can the machine do if the operator picks up the wrong figures?
3. Are the bookkeeping machines calculating machines?
4. Can they be adding machines?
5. Why would the proof sheets or tapes for one certain day be kept after that day's work had been proved?

VOCABULARY:

entry - ĕn′ trē - any one thing posted on a machine


OUT
OUT
IN
IN

TIME CLOCK



NO.

NAME

REGULAR HRS._____ AMT. _____

OVERTIME HRS._____ _____

DOUBLE HRS._____ _____

TOTAL _____

	M	T	W	T	F	S	S
DAILY TOTAL							

FIRM

TIME CARD

Posting Machines - Posting a Payroll Lesson 4

OBJECTIVE: To learn the principles of posting a payroll.

INFORMATION:

One place where posting machines are used often is in factories where many are employed and the employees punch a time clock each day. They do this when they come in to work and when they leave for home at the end of their workday. This will show exactly how many hours each has worked.

A clerk in the office of that factory condenses the information from the time card and finds the proper amount of gross pay due each employee at the end of each week. (Pay periods are usually one week long in factories.)

At a certain time each week, the card will be removed from the card rack and a new card for each employee will be put back in its place. These used cards will be taken to a certain clerical worker, who will work on them. She will find how many hours the man worked. She will get the information that tells her how much pay he gets for one hour. What do you think the next step is?

She will find the gross pay due each man. Now, these cards with the gross pay on them will be taken to a girl who works at the posting machine. This girl is probably the payroll clerk. It will be her job to see that each person gets paid the right amount. It must not be one penny too much nor too little.

The payroll clerk must get everything she will need at her machine before she begins to work. She will need all the information on deductions for each man. Her "total" answer will be the net pay (the amount of pay that the employee takes home).

Her machine will be set up so the carriage will move automatically to the right place on the employee's card for that specific operation to be printed.

There will be a tape in her machine for proving the payroll figures; she will insert the card that will have the permanent record on it. With some machines, the paycheck is inserted at the same time also, so that everything - the proof, the permanent record card, and the check are all typed at the same time. This avoids any errors that might be made if the figures had to be transferred.

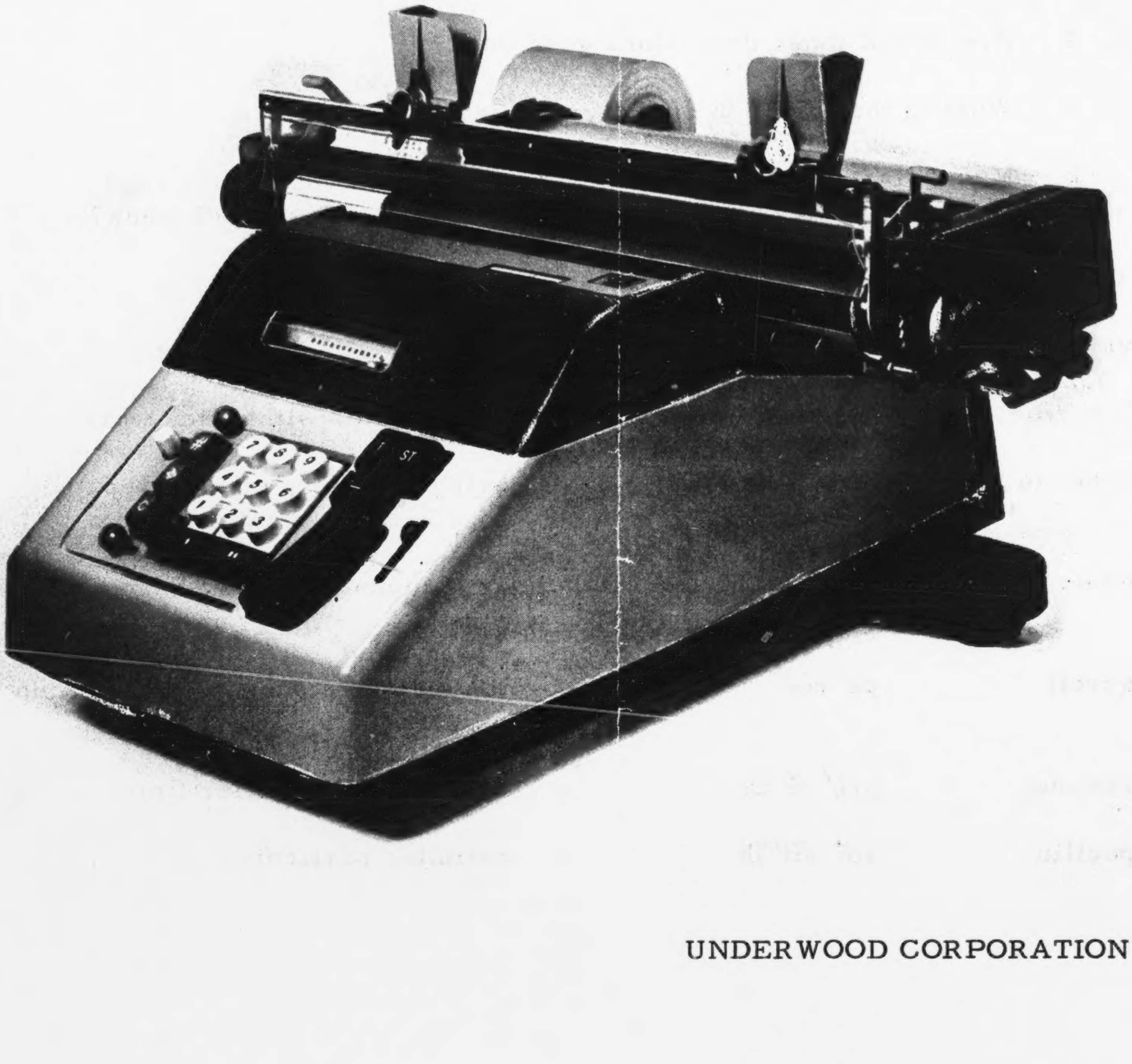
ASSIGNMENT:

1. What are time clocks?
2. What is another name for "net" pay?
3. Does everyone who works have deductions taken from his pay?
4. Are any of these deductions good ones?
5. What is the main job of a payroll clerk ?
6. If you start to work at a new job and are told you will be paid $60.00 per week, will you get $60.00 at the end of each week?

VOCABULARY:

avoid	ȧ void′	keep away from, do not do
clerical	klĕr′ ĭ kəl	having to do with office work
condense	kŏn dĕns′	bring together, combine, put together in a smaller space
deduction	dē dŭk′ shŭn	any amount subtracted from gross pay
payroll	pā′ rōl′	the entire amount paid to a group of workers
previous	prē′ vĭ ŭs	before, at an earlier time
specific	spĭ sĭf′ ĭk	definite, particular

UNDERWOOD-OLIVETTI ELECTROSUMA 22



UNDERWOOD CORPORATION

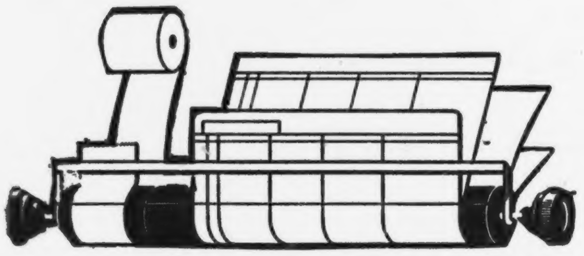
UNIT IX - BOOKKEEPING MACHINES

10-Key Underwood-Olivetti Posting Machine -- How To Post Bank Accounts

Lesson 5

OBJECTIVE: How to post debits and credits on bank accounts, and keep a running balance.

INFORMATION:



1. Each account will be under a name, possibly two names. These might be a husband and wife.
2. The name will be preceded by a number. This is called the code number of the account.
3. The checks and the deposit receipts will also be sorted, and filed in alphabetical order.
4. They will be taken to the machine operator, who will post the amounts on the correct cards, according to name and number.
5. The operator will post according to the following rules:
   a. Use the current date for posting.
   b. Pick up the old balance.
   c. Deduct all checks.
   d. Add all receipts.
   e. Take a total. This will be the new balance.
   f. The entire section must be proved in this same order.
6. This machine has a non-add key, and a non-print key, which may be used when needed.
7. A correction key, marked C, is to be used to "erase" the figures indexed, when necessary. The window of dials shows how many figures have been indexed.

8. The chart below shows how to post debits and credits to a bank account:

Old Balance	Date	Check Number	Amount of Check	Amount of Deposit	New Balance
Add	N. A.	N. A.	Subtract	Add	Subtotal

Old Balance	Proof
Subtract	Total

Each total on the tape (at the left) should prove the transactions posted on the card for that account.

ASSIGNMENT: Let us try each of the following on the machine:

1. Old balance $110. 98; August 1, 1964, check for $5. 68. Find new balance.

2. Old balance $68. 72; August 10, 1964, deposit of $78. 19. Find new balance.

3. Old balance $100. 08; Sept. 1, 1965, check for $6. 89, deposits of $8. 49 and $68. 79. Find the new balance.

4. Old balance $1, 609. 08; May 9, 1966, checks for $7. 89 and $16. 98, deposits of $98. 89 and $16. 42. Find the new balance.

5. Old balance $. 68; August 30, 1966, check for $18. 00, deposits of $109. 78 and $709. 84. Find the new balance.

VOCABULARY:

credit - krĕd′ ĭt - an entry of money to be added to an account

current - kẽr′ ĕnt - of the time now, at present

debit - dĕb′ ĭt - an entry of money to be paid out of an account

precede - prē sēd′ - come before something else

receipt - rē sēt′ - written statement that money, a package, a letter, etc. has been received

UNIT IX - ACHIEVEMENT TEST

1966 Balance $8972.21

December 1. Issued check No. 232 for $125 for the December rent.

2. Received a check for $308.21.

3. Sold merchandise to Frank R. Swift, $153.25.

4. Purchased merchandise, $952.70.

5. Issued check No. 233 for $25.50.

6. The cash sales for December 1 to 15 were $1,539.55.

7. Issued check No. 234 for $20.

8. Received a check for $247.

9. Issued check No. 235 for $638.18.

10. Received a check for $150.18.

11. Issued check No. 236 for $933.65.

12. Sold merchandise to Michael Link, $330.85.

13. Sold merchandise, $197.50.

14. Issued check No. 237 for $220.40.

15. Received a check for $246.76.

16. Purchased merchandise, $426.40.

17. Purchased merchandise from Carpenter Bros., $521.30.

18. Issued check No. 238 for $600.

19. Issued check No. 239 for $300.

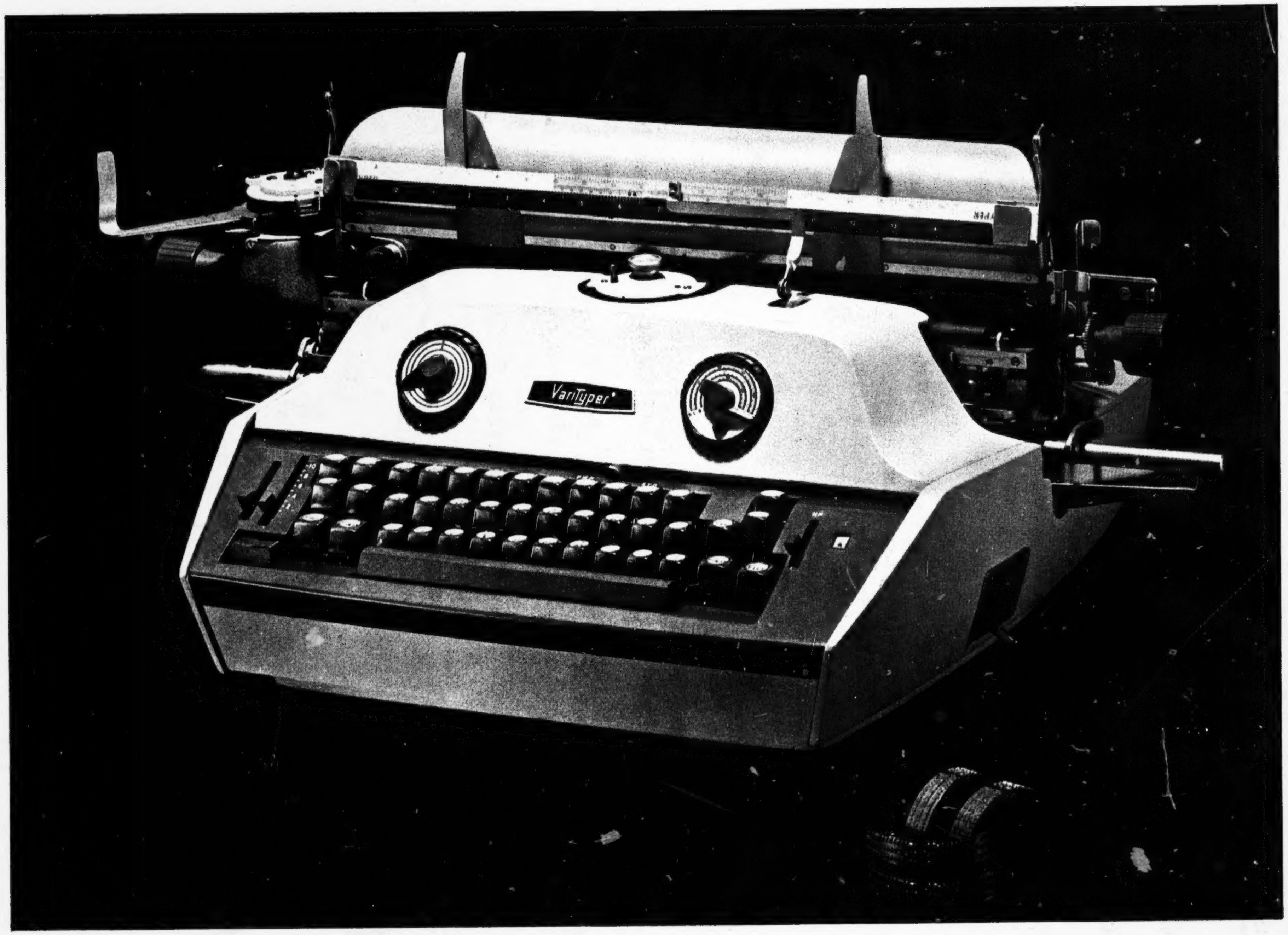
20. Issued check No. 240 for $60.

21. Issued check No. 241 for $29.21.

22. The cash sales for December 16 to 31 were $931.40.

PROJECT:

A complete set of checks, receipts, debits, and credits is available for posting on a set of alphabetized statement cards. All are identifiable by both name and check code number. The whole set is arranged so that a proof must be made at the end of the statement under each letter of the alphabet.



VARITYPER MODEL 660 VARITYPER CORPORATION

UNIT X - VARITYPER

What the VariTyper Is **Lesson 1**

OBJECTIVE: To learn what kind of machine the VariTyper is.

INFORMATION:

1. The VariTyper is a machine which looks very much like an ordinary typewriter, but the work it turns out looks like the printing done by a printer.

2. The keyboard is like the typewriter, with one exception. The lower case, upper case, and all number symbols are on three rows of keys instead of four rows.

3. The touch system is used.

4. The typist must strike the keys with a hard, slow, even touch. This is called "staccato" touch.

5. The VariTyper has 1,000 different styles of type that can be used on the machine.

6. Each kind of type is on a separate piece of metal called a font.

7. The fonts are kept in a tray underneath the keyboard.

8. These fonts can be changed easily and quickly when a change in the kind of type is needed.

9. Two fonts can be put on the machine at one time. An operator can work fast when two are on, as well as with only one. She can turn from one to the other very quickly.

10. Some VariTypers are built with standard spaces for all letters. This means that all letters use the same amount of space horizontally.

11. Most VariTypers are built with differential spacing. This word means that each letter takes only the amount of space it needs. An "m" is wide, and it would take more room than an "n", which is smaller. When you see "DS" on a VariTyper, it means differential spacing.

12. The VariTyper can be used for regular typing, but that is not its real purpose. It is used to make lined forms, price lists, newspaper columns - anything that needs a justified right margin, and almost anything else one could want. It has so many different kinds of type and can do so many kinds of jobs that it gets its name from "various," or "variety."

13. There are many models of VariTypers. Each model can be used to do a particular job better than any other can do it.

ASSIGNMENT:

1. What is a font?
2. Where does it get its name?
3. Why are there so many different kinds of fonts?
4. Describe the staccato touch.

VOCABULARY:

differential	dĭf ẽr ĕn′ shȧl	having differences from each other
exception	ĕk sĕp′ shŭn	an unusual one that does not follow the usual rule
font	fŏnt	in printing, a complete set of type of one size and style
staccato	stȧ kä′ tō	quick, short, clear-cut
VariTyper	vâr′ĭ tī pẽr	a machine similar to a typewriter. Many different kinds of type can be used on it

VARITYPER MACHINE'S CHANGEABLE TYPE

▲÷±+§▢★–=″○′♁×¨●□■⊕[`♦]~-;‡

▲÷±+§[§★–+§▢ ▢

ZAQWSXCDERFVBGTYHNUJM,KI

THIS IS A LARGE TYPE

THIS IS A SMALL TYPE

TYPE IS INSTANTLY CHANGEABLE – SHARP, CLEAR PROFESSIONAL APPEARANCE – HUNDREDS OF DIFFERENT TYPES ARE AVAILABLE:

- **LARGE GOTHIC FACES – for headings and displays**
- ***GOTHIC SLANT for emphasis with Gothic faces, and for headings***
- ROMAN FACES for attractive and easy to read text
- *ITALICS for emphasis in text, captions, and notes*
- LIGHT **MEDIUM** and **HEAVY GOTHIC FACES** to suit any job
- SPECIAL faces for display and special applications
- $\omega + = \pi \sqrt{} \Omega < > \Theta \Psi \wp \iota \int$ *SYMBOLS for specialized fields*
- LANGUAGE Types in major world languages
- CONDENSED TYPES for limited space and economy
- COPPERPLATE FOR FORMS

UNIT X - VARITYPER

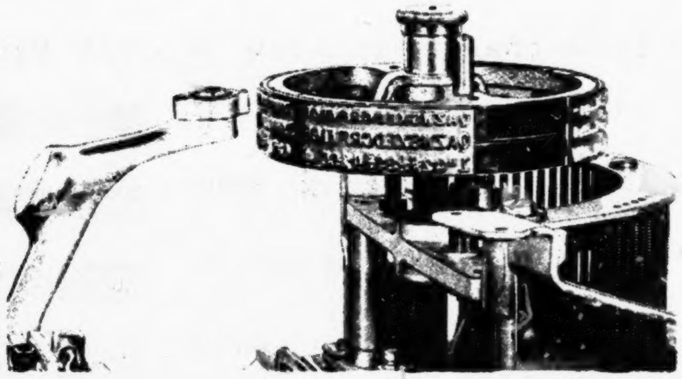
The Operator's Touch — Lesson 2

OBJECTIVE: To learn more about the particular touch needed for the operation of the VariTyper.

INFORMATION:

It is necessary for the student to understand the way the VariTyper works. Let us consider the following facts:

1. Whenever a key is struck, it causes a hammer to come up from the back and strike the proper letter on the font. This will be the font on the back of the anvil. The font on the front is not being used; it is there for a "spare."



2. When an operator first strikes the key, it "bottoms" the key, and brings the hammer in the back up to the position ready to strike the letter. When the operator continues to strike the key with the same firm touch, the hammer is made to come forward and strike the correct letter on the font.
3. This is actually a double action. Two things had to happen.
4. This is the reason the operator must use the firm, even, strong touch.
5. It will be slower than the touch used on an electric typewriter. It is called the staccato touch.

ASSIGNMENT:

Demonstrate the staccato touch. Have each student participate, as time permits.

VOCABULARY:

anvil - ăn′ vĭl - a heavy metal block that a hammer can hit against without doing harm

UNIT X - VARITYPER

The Various Kinds of Type Available — Lesson 3

OBJECTIVE: To learn about the different kinds of type.

INFORMATION:

Each font is a different style or size of type, embossed on a rounded metal piece. There are at least 1,000 different fonts for the VariTyper. Some are in other languages, some have symbols for certain occupations, and many are simply different styles of type.

The machine can be operated with two fonts on it at the same time. The anvil can be turned quickly around from one font to the other. These two can be taken out and two other styles inserted. This makes it possible to use many different styles of type on one paper.

These fonts may be changed in a few seconds' time.

small spaces, in popular styles such as

ALEXANDRIA or LITHO BOOK

with matching italics,

or SANS SERIF Styles for special

work, with extra special

DESIGNS FOR DRAFTING. Ω Σ

∇ > Δ Γ < ∂ ∠ ∴ ~ ȷ \

FORMS DESIGN ALSO

HAS ITS SPECIAL STYLES.

Yes, faces to meet the needs

of the CHURCH or social

work with a personal touch.

ASSIGNMENT: Students may examine fonts and learn to change them.

VOCABULARY:

available	-	ȧ văl′ ə bl	-	that can be had
emboss	-	ĕm bôs′	-	to raise above the surface; to ornament with a design that stands out from the surface

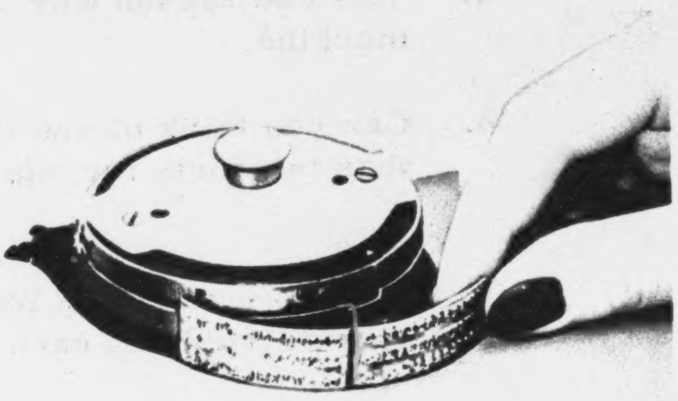
UNIT X - VARITYPER

How To Insert Fonts

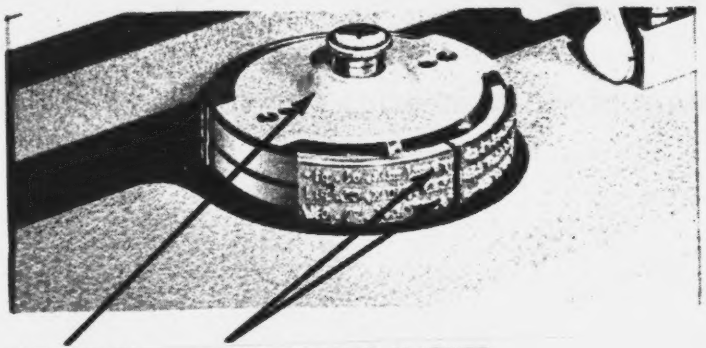
Lesson 4

OBJECTIVE: To learn how to insert or change fonts.

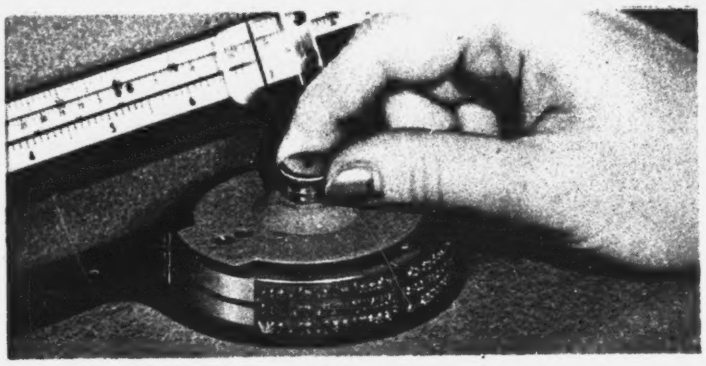
INFORMATION:



1. Raise the anvil. Turn it right to the font.
2. Press down the type-change key. The anvil will be held up.
3. Insert the font, with the eyelet nub down. The eyelet nub will fit in the wide slot.
4. Slide the font to the left until the center line in the font is exactly under the center line in the anvil.



5. Release the type-change key by pushing the lock lever back.
6. Lift and turn the anvil knob as far as it will go; release gently. When the anvil is in the proper place, it will set down over the anvil pin. The font in use must be nearest the carriage.



7. The anvil will hold two fonts at one time, the one being used and the second one to be used when needed.
8. To change fron one font to another, lift the anvil knob and turn it as far as it will go. Do not use the type-change key. Now the font formerly nearest you will be on the back of the anvil, in typing position.

TO ACCOMMODATE A FULL RANGE OF TYPE FROM **LARGE** TO SMALL

ASSIGNMENT:

1. Name four parts used when inserting a font.
2. Give the steps for putting a font in place for use.
3. Tell one reason why one would want two kinds of type on the machine.
4. Can you think of one time when an operator would need more than two fonts for one piece of work?

Practical experience in inserting and changing fonts.
Practice in typing on each font, using the correct touch.

VOCABULARY:

nub - nŭb - knob, a small piece that sticks out

UNIT X - VARITYPER

How To Select Fonts

Lesson 5

OBJECTIVE: To learn how to select the proper font for the work at hand.

INFORMATION:

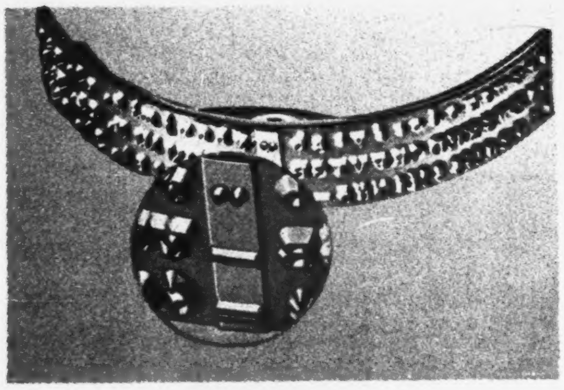
Each font has a 3-digit number, a 2-digit number, and a letter to identify it. For example:

Font No. 600 - 12 - C

1. The first number (600) designates the kind of type that is on the font. The lettering may be fancy or plain, in a wide choice of styles.
2. The second number (12) is the size of this type vertically; the amount of vertical space that it will take.
3. The letter (C) denotes the horizontal spacing, or how much room each letter will take from right to left.

The machine must always be set for each font, according to the letter and number on it. When the operator changes from one font to another, she must change the setting on the VariTyper.

Some fonts have in the center something called a forms device or forms segment. This has on it three kinds of lines. By using the forms-segment key or button, the machine will give the kind of line that is needed, as follows:



lower case: ------------ -

upper case: ____________ _

figures: ============ =

These "leader" lines may be used one unit of space at a time, or they may be repeated for any length by using the repeat ruling switch.

Repeat Ruling Switch

AUTOMATIC RULING

VARITYPER ruling, changeable type, and spacing combined, can compose any form with amazing speed, ease and economy – for any duplicating process . . .

SALES CREDIT REPORT

FOR OFFICE USE ONLY			
REPORTS	REQUESTED	IN FILE	RATINGS
REFERENCES			
RET. CREDIT			
BANK 1.			
BANK 2.			

REMARKS

RATINGS $

APPLICATION

NAME ....

ADDRESS ....

CITY ....

STATE ....

CITIZEN? ☐ YES ☐ NO

ITEM	1	2

¢QUANTITY DIFFERENTIALS (2)

AMOUNT, POUNDS	ADD OR DEDUCT PER POUND
50,000 AND OVER (1)	– $.010
30,000	BASE
20,000 THRU 29,999	+ .004
10,000 THRU 19,999	+ .008
5,000 THRU 9,999	+ .030
2,000 THRU 4,999	+ .055
1,000 THRU 1,999	+ .080
500 THRU 999	+ .110
300 THRU 499	+ .175
100 THRU 299	+ .270
50 THRU 99	+ .375
25 THRU 49	+ .525
LESS THAN 25	+ .725

(1) Applies to 50,000 pounds or more of any single item ordered for shipment at one time.

(2) Each order item is priced in accordance with the quantity of that item released for fabrication and shipment at one time, except:

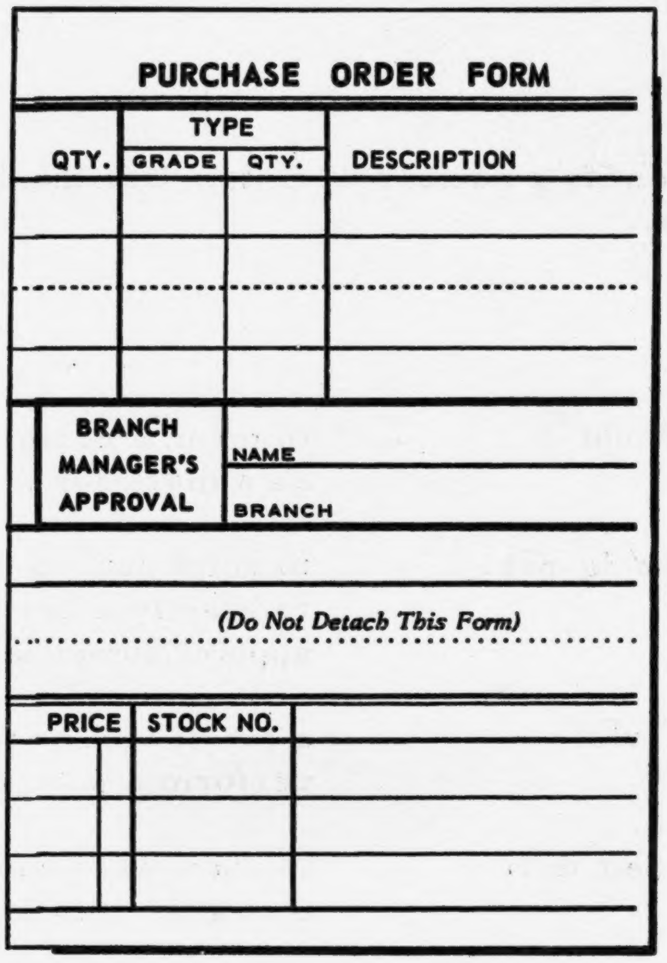
- a. Items of 600 pounds or more may be grouped for quantity.
- b. Items of less than 600 pounds may be grouped under (a) if identical except for length.

ASSIGNMENT:

Examine and identify a number of fonts. Use them on the machine as time permits.

VOCABULARY:

denote	dē nōt′	to mean a certain thing, to serve as a mark for something
designate	dĕz′ ĭg nāt	to point out, to indicate very clearly, to specify a certain thing; also to appoint someone
device	dĭ vīs′	a small tool or machine made to help perform a particular job
identify	ī dĕn′ tĭ fī	to show what something is; to show that a thing is what you say it is
segment	sĕg′ mĕnt	a part of a whole; a section of something



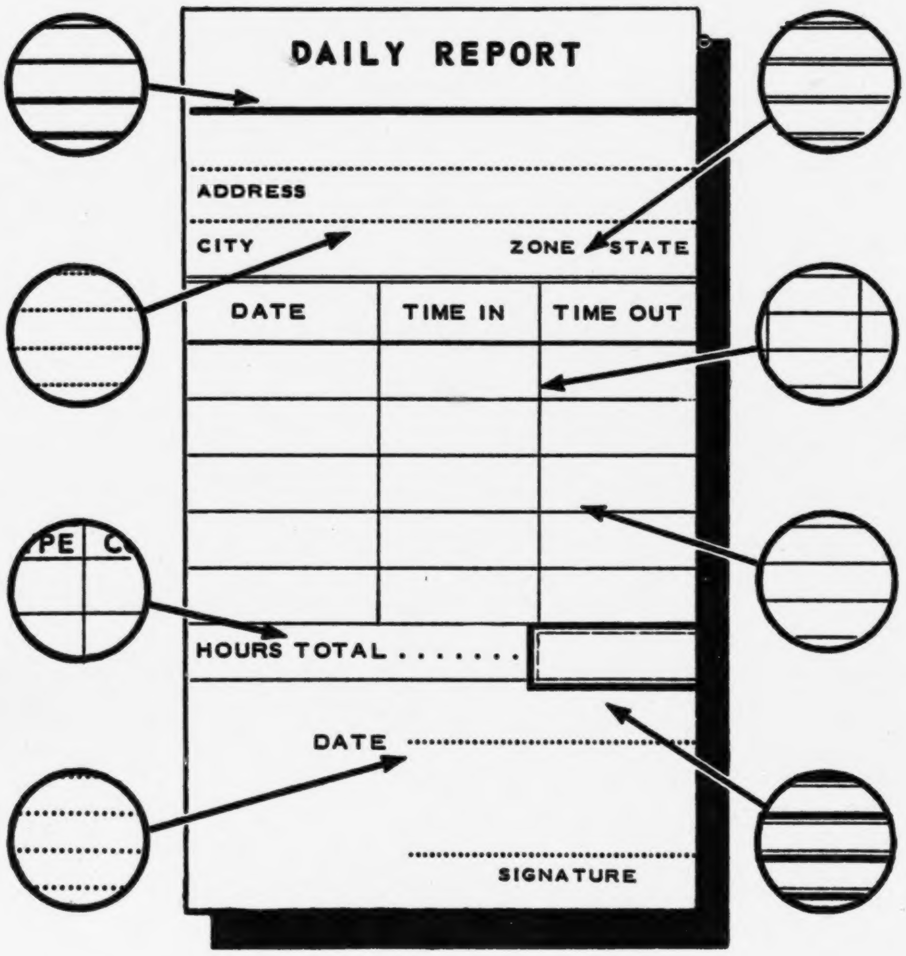
PURCHASE ORDER FORM

QTY.	TYPE		DESCRIPTION
	GRADE	QTY.	

BRANCH MANAGER'S APPROVAL
NAME
BRANCH

(Do Not Detach This Form)

PRICE	STOCK NO.



DAILY REPORT

ADDRESS
CITY ZONE STATE

DATE	TIME IN	TIME OUT

HOURS TOTAL . . . .

DATE ....

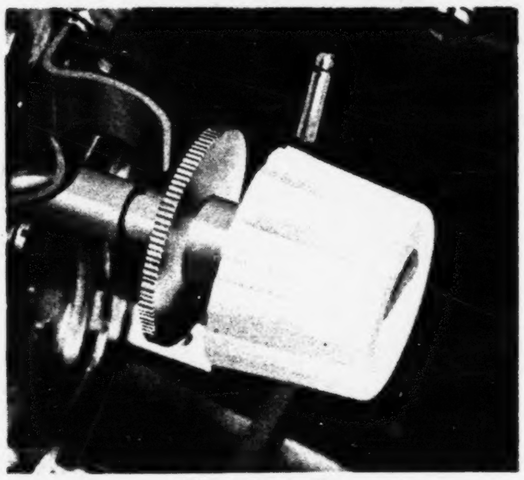
....
SIGNATURE

UNIT X - VARITYPER

Some Features of the Machine — Lesson 6

OBJECTIVE: To learn about some of the more important parts of the machine.

INFORMATION:



Vari-Line Gear

1. Vari-line gear - can be set for different amounts of vertical spacing between the lines of typing.

2. Impression lever - a small opening with 4 to 7 metal teeth and a lever. The lever is set at the lower numbers when the operator wants a light print, and in the higher numbers for a heavier, darker impression. The operator will set the lever according to what she wants in the finished job. (See illustration.)

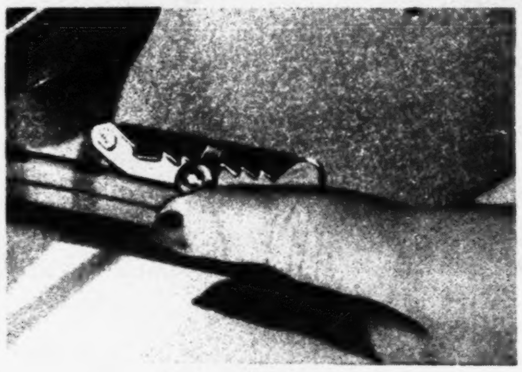
The impression is easily changed to accommodate Light FINE TYPES **or HEAVY BOLD TYPES**

FINE CARBON RIBBONS and

METAL to METAL IMPRESSION

PRODUCES SHARP CLEAR COPY for

ANY FORM OF DUPLICATION . . . . .



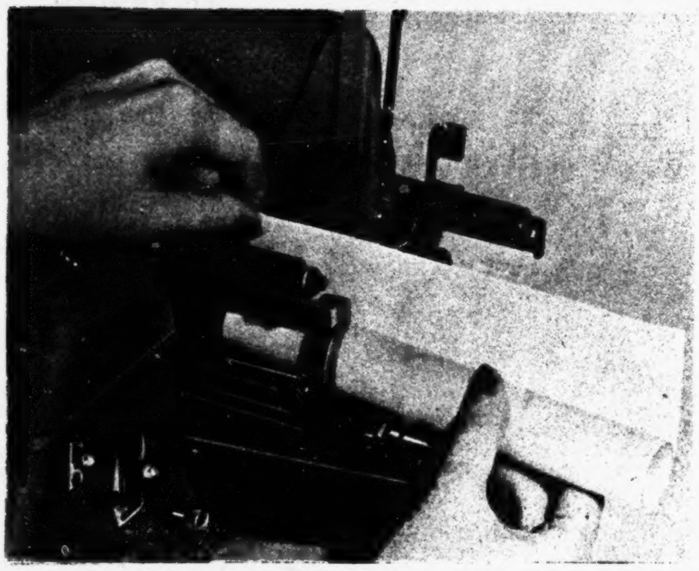
Impression Lever

3. Repeat key - to be used when an extra heavy and dark heading is needed. Hold down the letter you need darkened and strike the repeat key over and over again until the typing is as dark as is needed. You need not use the backspace key.

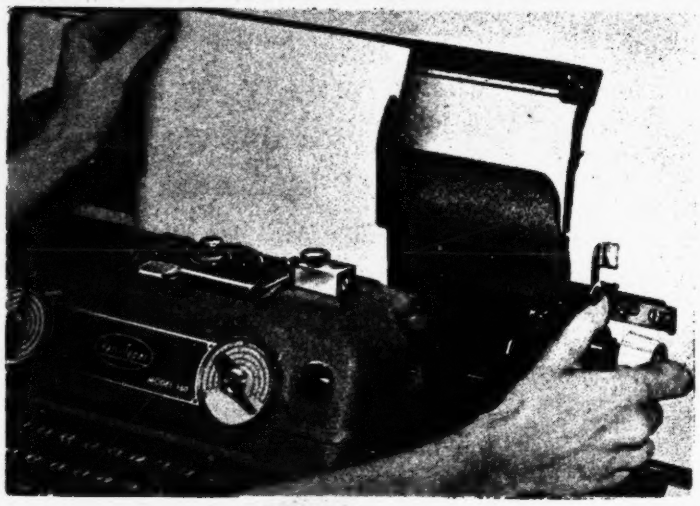
4. Non-print key. - Some models have this key, others do not. The use of it permits the operator to know if the spacing is correct without actually printing. On the newer machines the non-print key is used for centering.

5. Feed rolls - will open and close by using the feed-roll lever. They are used for the insertion of the typing paper.

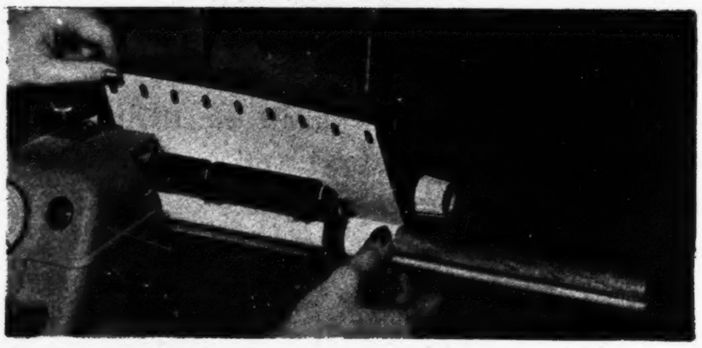
6. Paper insertion - there are three ways to do this.



a. Roll the paper into a small roll, leaving two or three inches not rolled. Hold so that this end stands up. Open the feed rolls. Insert the paper in the right end of the carriage with the end standing up. Push the paper in as far as you want it and straighten it. Close the feed rolls.



b. Drop the paper down from the top. Adjust it and close the feed rolls. Roll the paper down by turning the feed-roll knob toward you.



c. For large papers it is best to use the split wooden rollers. Pull out the clamps at both ends, open the roller and put the bottom edge of the paper in; close the roller and push in the clamps at each end. Turn the roller away from you; roll the paper around it tightly. Insert roller with paper, as in 6-a.

7. Things to remember about inserting the paper.

   a. Always center the paper in the carriage.

   b. If paper is not straight, press the feed-roll lever lightly, just enough to barely separate the feed rolls; then the paper can be moved slightly.

   c. Always turn the split roller away from you.

   d. When no split roller is used for rolling, you still roll the paper away from you.

   e. If inserting the paper from the top without rolling it, turn the feed-roll knob toward you.

   f. Tighten the paper guides in the proper place after inserting the paper. Be sure all is right before beginning the work.

   g. Fonts must be cleaned; clean them as you would clean the type on typewriters. Clean the back of the font also. Dry it after cleaning.

   h. Clean the anvil slot daily. Fold a stiff paper or a card and run it back and forth in the slot. Alcohol is a good cleaner to use for this.

ASSIGNMENT:

1. What is the use of the non-print key?
2. Is it best to use the split roller while inserting the paper?
3. How is the repeat key used?
4. Is this any different from the repeat keys on an electric typewriter?
5. Will the vari-line gear need to be used often?

Each student should type from straight copy, making practical application ofeach of the features listed.

VOCABULARY:

alcohol	ăl′ kȯ hôl	a liquid with no color. Some alcohols are found in wine, beer, whiskey, etc.; some are used in industry and are very poisonous
gear	gēr	a part of a machine with small teeth; when it moves, it makes other parts move a certain way
vari-	vâr ĭ	when used to begin words, means more than one, various

UNIT X - VARITYPER

Horizontal Spacing

Lesson 7

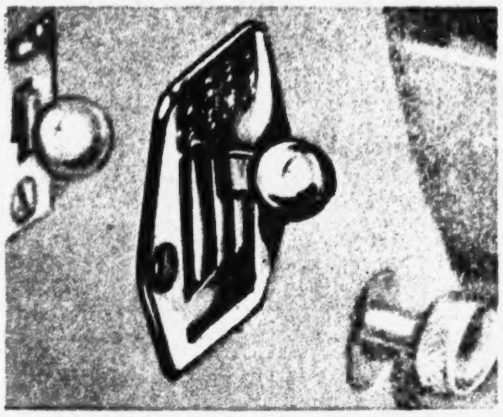
OBJECTIVE: To learn how to obtain proper horizontal spacing.

INFORMATION:

1. The VariTyper can be set for two different kinds of spacing.

   a. differential spacing
   b. standard spacing

2. Each letter has the exact amount of space it needs - only if the machine is set for differential spacing.



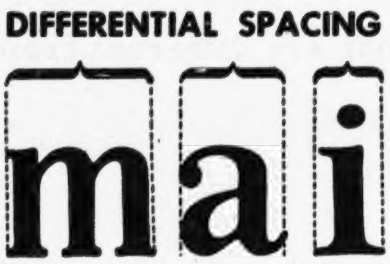
Horizontal Spacing Lever

3. The spaces are called increments on the VariTyper; you will remember that they were called units on the IBM Executive typewriter. An increment is $\frac{1}{3}$ of a normal space.

4. If the machine is set at standard, all letters will be given the same amount of horizontal spacing.

5. On the right side of the VariTyper is the horizontal spacing lever. Each slot is marked with both a letter and a number. The numbers 13, 14, 16, and 18 mean the number of letters which can be typed in one inch of horizontal space.

   If the machine is set at standard spacing, and you are using large type, the lever should be set at 13, because each letter takes up a large amount of space. If you are using a very small type, the lever should be set at 18, because more small letters will fit into one inch of space.



   If the machine is using differential spacing, set the horizontal spacing lever on the letter that helps to identify the font you are using.

6. When using differential spacing, you may figure that the average character takes 3 increments.

7. Below is the increment chart. You are expected to learn it.

INCREMENT CHART

2 Increments	3 Increments	4 Increments
l i f t j r	q a z s x e d c v	w m
	g b y h n u k o p	
, . ; - I !	J S	
	ﬂ ﬀ ﬁ	(All capital letters except I J S)
: ' ' ( )	1 2 3 4 5 6 7 8 9 0	
	$ ¢ ? * /	– & % ¼ ½ ¾

ASSIGNMENT:

Each student must learn the above increment chart (homework).

Each student may type copy work on the machine, especially to practice the proper touch, to make erasures properly, and to set the horizontal spacing according to the font being used.

1. Is there any other office machine that you know of, on which one can change type?

2. What other machine have you used where all the letters did not take the same amount of horizontal space?

3. Is the keyboard on the VariTyper the same as on a typewriter?

4. Describe the touch that is used on the VariTyper.

VOCABULARY:

average - ăv′ẽr ĭj - usual, ordinary

differential - dĭf ẽr ĕn′ shȧl- having differences from each other; also, the amount of the difference

increment - ĭn′ krĕ mĕnt - a very small increase in size

various - vâr′ ĭ ŭs - several, that are different from each other

UNIT X - VARITYPER

Vertical Spacing on a Machine With No Lineomatic Mechanism

Lesson 8

OBJECTIVE: To learn how to set the machine for proper vertical spacing when there is no Lineomatic mechanism.

INFORMATION:

1. Vertical spacing is measured in points. This is another word used in the printing trade. It describes how high a letter is.

2. When the feed roll is turned, you might be able to hear, or you can feel, tiny clicks. There are 72 points in one vertical inch, and the machine will make 18 clicks to a vertical inch - or 1 click for every 4 points.

   You remember that the middle identifying number of a font had to do with the vertical size of the letters. If a font is numbered 680 - 12 - B, one line of typing and the space below it would occupy 1/6 of one vertical inch. This is true, you can tell, because 12 is 1/6 of 72.

3. The vertical spacing between lines depends partly upon the size of the type you are using. It also depends upon the amount of space the operator wants between the lines of typing. Extra space between the lines is called leading.

4. For example, if a 10-point type (680-10-B) is being used, then one line, together with its standard vertical space, would come to 10 points. Now suppose the operator wants the spacing to be 12 points; she would add 2 points of leading (12 points). If no leading is needed, we say it is "set solid." (There would be no extra space between the lines.)

VARITYPER COPY – 10 POINT TYPE
(Set Solid)

When material used to back-up a fold-out sheet is of a size that does not utilize the full text area of the sheet, it shall occupy the area nearest the bind side of the sheet and the marginal copy shall appear on the page nearest the bind side of the sheet. When fold-out sheets are required these shall be backed up by material of similar size, whenever

VARITYPER COPY – 10 POINT TYPE
(Leaded 2 Points)

When material used to back-up a fold-out sheet is of a size that does not utilize the full text area of the sheet, it shall occupy the area nearest the bind side of the sheet and the marginal copy shall appear on the page nearest the bind side of the sheet. When fold-out sheets are required these shall be

VARITYPER COPY – 10 POINT TYPE
(Leaded 4 Points)

When material used to back-up a fold-out sheet is of a size that does not utilize the full text area of the sheet, it shall occupy the area nearest the bind side of the sheet and the marginal copy shall appear on the page nearest the bind side of the sheet.

5. We can easily set the machine for five different vertical spacings, when the machine is set on standard, by using the spacing lever. Keep in mind that there are 18 clicks to one vertical inch.

    a. 9 lines per inch: one line of typing and 1 click between the lines would make 9 lines of typing in one inch.

    b. 6 lines per inch: one line of typing and 2 clicks between lines would make 6 lines per inch.

    c. $4\frac{1}{2}$ lines per inch: one line of typing and 3 clicks.

    d. $3\frac{3}{5}$ lines per inch: one line of typing and 4 clicks.

    e. 3 lines per inch: one line of typing and 5 clicks.

6. The vertical setting is done by using a vari-line gear or the line-feed lever and small parts, depending on the model one is using.

ASSIGNMENT:

1. What is meant by "clicks" in the vertical inch?
2. What does the second number on the font mean?
3. What kind of spacing must the machine be using if we want to use the above table?
4. What other kind of vertical spacing is there?
5. How many clicks are there in one vertical inch?
6. What does a "click" mean?

VOCABULARY:

leading	lĕd′ ng	In the printing trade, a thin strip of type metal, used to separate lines of type. The VariTyper does not use actual leads, but uses the same word
measure(v.)	mĕzh′ ẽr	to find out how much, or how long, or how many, using something standard to check by
mechanism	mĕk′ ȧ nĭzm	the parts of a machine that make a certain thing happen

standard (n) -	stăn′ dẽrd -	something used to measure or judge other things against
standard (adj.) -	stăn′ dẽrd -	most commonly used, as in standard spacing, or a standard typewriter

UNIT X - VARITYPER

Vertical Spacing Using the Lineomatic Mechanism — Lesson 9

OBJECTIVE: To learn how to space lines correctly when the machine has a Lineomatic mechanism.

INFORMATION:

1. The word "Lineomatic" is the manufacturer's short way of saying that the lines can be spaced automatically. Just as with other machines, the operator must know how to use all the parts of the machine correctly if she wants it to do the right things.

2. At each side of the anvil is a solid metal strip. These strips are called alignment guides. They are used to help you make sure the paper is inserted straight, before typing.

   Press the paper, from the back, against the left alignment guide and then against the right guide. The base (bottom) of the letters should rest exactly on the top of the guides.

3. Never use the ribbon guides for aligning the paper.

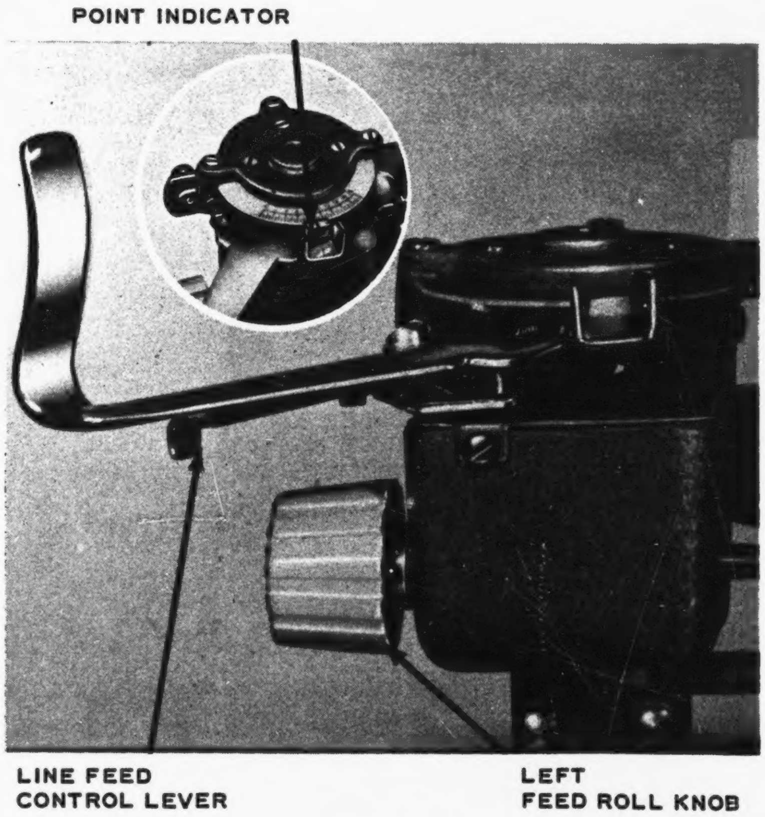
4. The Lineomatic mechanism is used for getting the correct amount of space between the lines of typing. There are four parts to it:

   a. The dial is the round piece which is marked off into points and half-points.

   b. The point indicator is the part used to get the amount of space that we want between the lines. To set it, pull it out and align it with the proper number.

   c. The line feed lever is used to feed the paper up and down when we are typing.

   d. The feed-line control lever regulates the direction in which the paper goes.



5. To return a paper to a line above where it is, the operator must:

   a. Feed the paper 1 line down into the paper basket.
   b. Return it back up to the line wanted.

6. The left feed-roll knob is used to engage the Lineomatic with the feed rolls. Push the knob in and turn it clockwise (towards you) to engage it.

Important to Remember

When the Lineomatic is engaged, the feed rolls may be turned only by using the line-feed lever. When the Lineomatic mechanism is not engaged (disengaged), the rollers may be used to roll the paper up or down, using either the right or left knob.

ASSIGNMENT:

1. Name the four parts of the Lineomatic mechanism.

2. Tell what each one of the parts does.

3. What is the correct way to turn a paper back to a line above the line where the operator is typing?

VOCABULARY:

clockwise	klŏk′ wīz	in the circular direction that the hands of a clock go.
engage	ĕn gāj′	to fit into; to lock together
guide (n.)	gīd	a thing that directs you to place something correctly
Lineomatic	līn ō mă′ tĭk	a part that can be set so that the lines will be as far apart or as close together as you want them to be
manufacturer	măn ū făk′ chər ər	the owner of a company that makes goods, or the company itself

UNIT X - VARITYPER

How To Center Horizontally — Lesson 10

OBJECTIVE: To learn how to center horizontally.

INFORMATION:

1. Insert the paper in the center of the carriage. Paper that is $8\frac{1}{2}$ inches wide must be inserted between $2\frac{3}{4}$ and $11\frac{1}{4}$ on the plotting scale.

2. Slide the centering scale so that its 0 mark is over 105 on the plotting scale.

3. Move the carriage until the red line in the "gunsight" is over the 0. You may use either the increment space key or the backspace key to line up the 105, the 0, and the red line.

4. Push the non-print lever to NP. Blind-type the heading as you want it, and make a note of the number on the line where the gunsight stops, using the top small row of figures on the centering scale.

5. Move the carriage so that the line on the gunsight is over the same number on the upper left half of the centering scale.

6. Release the non-print lever and type exactly as before.

ASSIGNMENT: True or False

____ 1. Blind-typing means touch typing with your eyes closed.

____ 2. This way of centering is similar to centering on another machine that you have used.

____ 3. Usually you can tell just by looking, where to center a heading.

____ 4. Centering does not have to be done exactly right. It can be done almost right.

VOCABULARY:

plot - plŏt - to mark the position of something; to plan

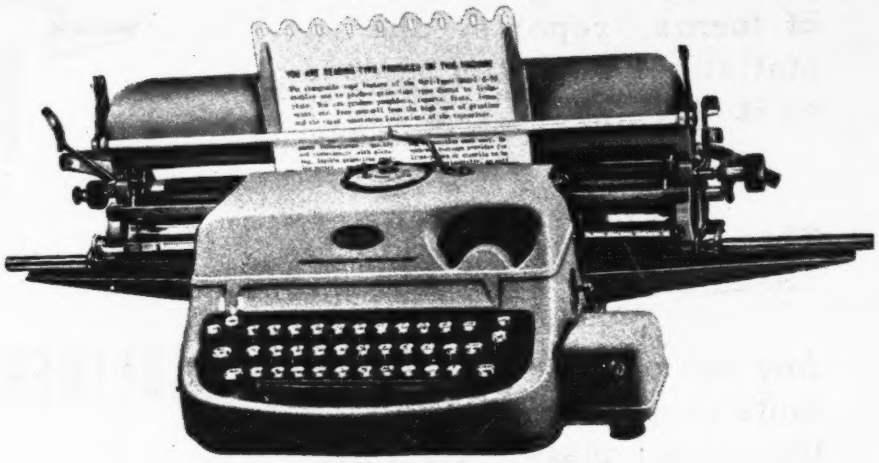
gunsight - gŭn′ sīt′ - a mark on a lever above the centering scale

VariTyper - Different Models — Lesson 11

OBJECTIVE: To learn about the different kinds of VariTypers.

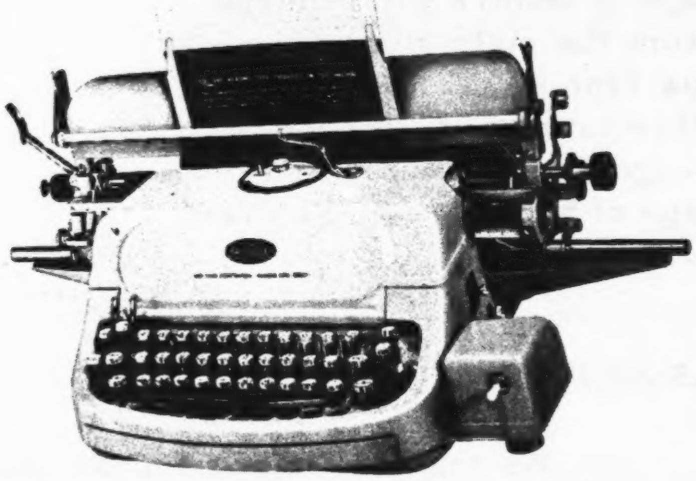
INFORMATION:

Model A-20



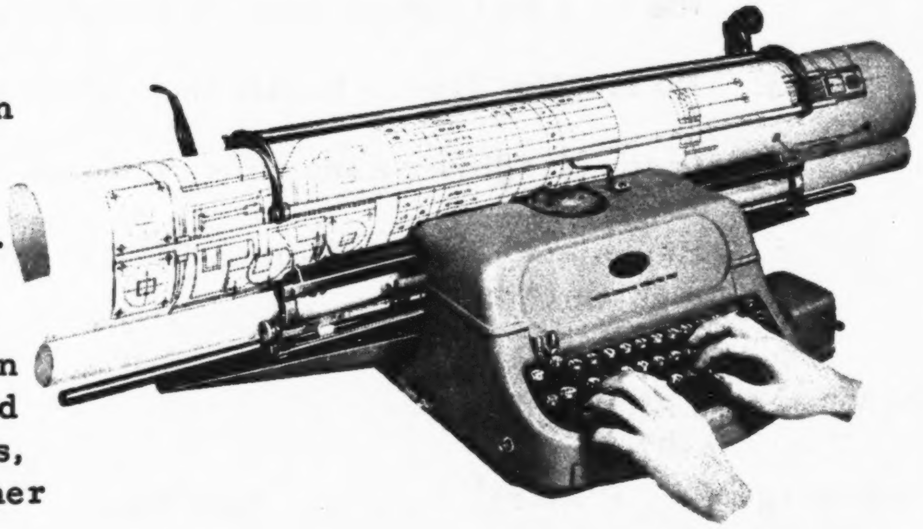
Notice the dial on the right front of the machine; it means that this model will justify margins. This model is versatile: many kinds of forms, charts, and other larger papers can be made on it.

Model F-16



This model is less versatile than the A-20. An operator would use it very much as she would a typewriter. It has standard spacing only; justifying cannot be done on it. However, all the various kinds of type can be used on it.

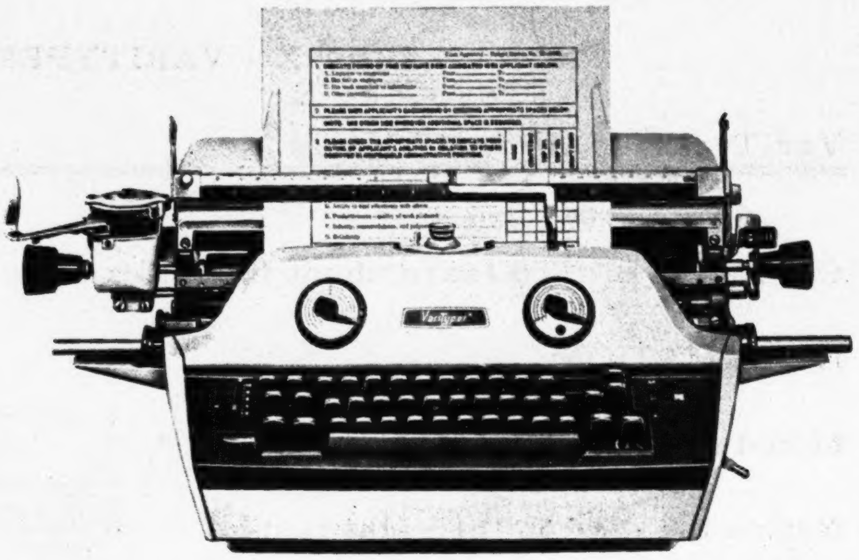
Model E-24



This is an engineering model. It is used especially for large papers. See in the illustration that it has an extra long carriage, and a "basket," both suitable for large papers. These carriages are made in lengths up to 12 feet. The length, combined with the open ends, makes it especially good for typing on papers like maps, blueprints, charts, or any other large-size paper.

Model 110 F

On this model, both the right and left margins can be made perfectly straight. All kinds of forms, reports, and statistical work can be done on it.



This model is named "Headliner."

Any one of the changeable fonts may be inserted in the proper place. By dialing the letter needed, the tape of letters will emerge from the right side of the machine as seen in the illustration. As the name suggests, the completed tape of words would be used for a heading.

HEADLINER

MULTIGRAPH CORPORATION

ASSIGNMENT:

1. Be ready to talk about the various kinds of work that can be done on a VariTyper.
2. Is the VariTyper used most of the time for straight typing, the kind that can be done on a typewriter?
3. Do all VariTypers justify the right margin?
4. Is the Headliner a machine on which to type?
5. How many of the machines illustrated are designed for making forms?

VOCABULARY:

emerge -	ē mẽrj′	- come out
versatile -	vẽr′ sȧ tĭl	- able to do many different things

OBJECTIVE: To learn how to justify on Model 110 F.

NICHOLAS JENSON

It was the genius of NICOLAS JENSON that established a new school in typography, being the first to design a pure roman face. He was born in Sommevoire, France in the year 1400 and died in 1480, productive almost to the last years of his highly useful life.

EARLY FAME

At the age of 38 he had already won typographic fame as one of the most skilled die-cutters, engravers and typographers of his time. It was then that Charles VII ordered him to Mainz, Germany.

FOURSCORE and seven years ago our fathers brought forth on this continent a new nation conceived in liberty, and dedicated to the proposition that all men are created equal. Now we are engaged in a great Civil War, testing whether that nation, or any nation so conceived and so dedicated, can long endure. We are met on a great battlefield of that war. We have come to dedicate a portion of that field, as a final resting place for those who here gave their lives that that nation might live. It is altogether fitting and proper that we should do this. But, in a larger sense, we cannot dedicate—we cannot consecrate—we cannot

INFORMATION:

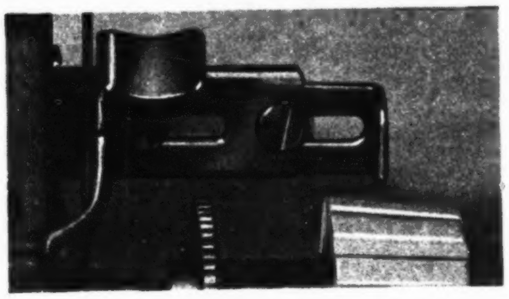
What is meant by "justifying" a margin?

A good example of justified lines can be seen in the columns of a paper or magazine.

On the VariTyper, we will type two columns at the same time, line by line. The lines on the left will not be justified; this column will be thrown away when we are finished. The lines on the right will be justified; this column will be our final copy. The machine itself will justify the right-hand column if we follow all the rules exactly.

Steps in justifying

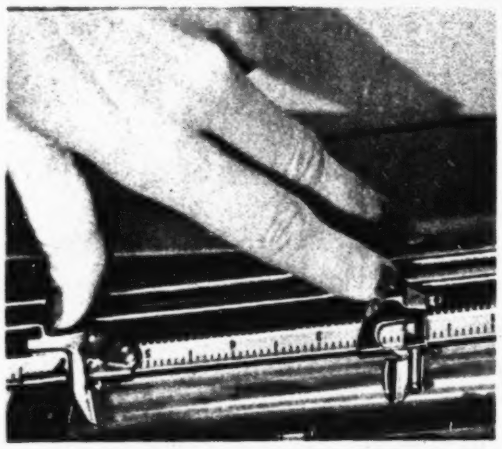
1. There is a ratchet in back of the knob at the right end of the carriage, which is controlled by a short piece of metal held by two screws. This piece of metal must be pulled out.



2. Set the carriage all the way to the left.

3. Set the removable stop on Number 6 of the front margin scale. Do not change it or remove it until after justifying work is completed.

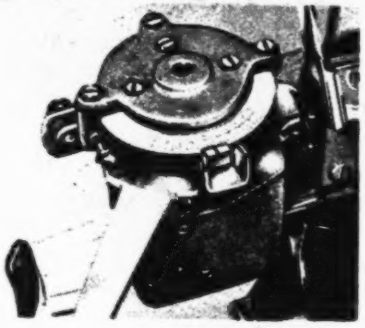
4. Think now and decide how wide you want the column of typing to be. If you want a column 4 inches wide, subtract 4 from 6; the answer will be 2. Set the fixed, permanent stop on 2. This is the left marginal stop.



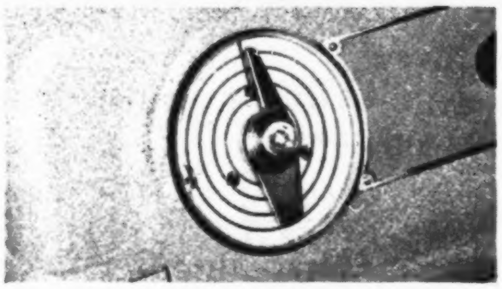
5. Bank the carriage to the right by pulling by the right knob.

6. Space up the proper place with the Lineomatic mechanism.

7. Tap the 1-increment key 3 times.

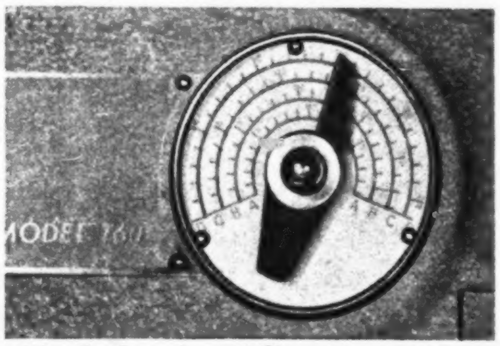


8. With your finger, turn the arrow in the left circle clockwise, until the arrow is over the painted line. Never turn the arrow counterclockwise.



9. Type one line until the light in the right circle lights up; a bell will ring also.

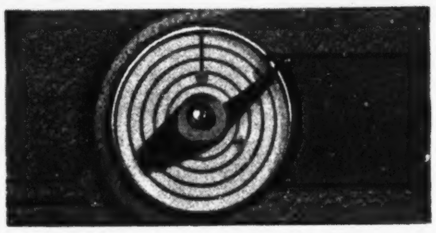
10. Stop typing, count the increments that are left, and decide whether there is room for you to type the next word. Watch the arrow on the right circle.
    The striped portion on the circle is called the justification area. Stop typing before the arrow goes below the line on the left side.



11. Hold your hand under the Lineomatic while you tab over to the margin stop. (This is necessary so that the carriage will not bang over too hard.)

12. Tap the 1-increment key 3 times.

13. Turn the outer rim of the left circle in either direction, to put the little V in it exactly opposite the arrow.



Starting Point – Justified Copy

14. Type exactly the same line again. Do not type more. This time the machine will justify the line.

15. When it is finished, pull the carriage back to the right. Do the next line. Follow all the rules, beginning with Step 7.

16. Finish the typing. When you have finished, the right and left sides of the right column should be justified (straight). If you were working in a newspaper office, you would cut the two columns apart. The right, justified column would be pasted on a larger sheet to use for the newspaper, and the left column would be thrown away.

17. To indent for a paragraph: On the rough copy, type one "n" for each space you want to indent. On the justified column, type the same number of "n's," using the non-print key.

Important Things to Remember About Justifying

The space bar controls justification, because the extra room used for justification takes place between words.

Always bottom the space bar as you do a key of the keyboard.

Always press space bar near center of bar--not at either end

Do not use space bar to indent paragraphs or for any reason except for space between words.

Do not space after last word typed on rough copy line.

ASSIGNMENT: True or False

____ 1. On this machine, we can justify both margins.

____ 2. The ratchet is the sliding part that is necessary to make the machine justify the right margin.

____ 3. An increment is a way of measuring, just as a space is a way of measuring.

____ 4. An increment on the VariTyper is the same width as a space made with the space bar.

____ 5. The carriage can be moved to the right by using the Lineomatic.

____ 6. We tap the 1 increment key before typing so that the left side of the typing will be justified.

7. Justify the following paragraph in a column 3 inches wide.

One of the challenges to almost any company, while serving the existing needs of an industry, is to maintain a certain visionary attitude about the prospects for that industry's future. For example, we have been serving the pipeline industry for many years. Everyone knows that water, steam, sewage, gas, and oil and its derivatives are traditional materials transported underground by pipeline throughout the country--some of them for a century or more. What many people do not realize is that the industry is quietly at work exploring the possibility of moving materials previously never dreamed of as candidates for pipeline movement. Everything from metallic ores to milk, limestone to liquid detergents, cement, clay, and grain are under study. Some of these are in their natural state, others are in slurries. Some of these--powdered coal for instance--are already being pipelined commercially in sizable tonnages. Thus, a method of moving materials that perhaps seemed fully developed may, in reality, be only in its infancy. What does this mean to the suppliers of equipment to this industry?

VOCABULARY:

bank (v.)	-	bănk	-	to push hard all the way to the margin or the stop
counterclockwise	-	koun′ tẽr klŏk′ wīz	-	in a circular direction opposite to the way that the hands of a clock move
ratchet	-	răch′ ĭt	-	a wheel with teeth that come against a catch, so that it can turn in one direction but not in the other

UNIT X - VARITYPER

Trouble-Shooting **Lesson 13**

OBJECTIVE: To learn how to handle some problems that may arise when using the VariTyper.

INFORMATION:

PROBLEM	SOLUTION
1. If machine stops while typing	1. Check to be sure the electric plug is in.
2. If the letters are crowded together	2. Check to see if the horizontal spacing lever is set at the correct number for the font you are using.
3. If letters are spaced unevenly	3. Check the lever on the right side of the machine. Be sure it is set correctly for a standard or differential font. (Differential numbers are No. 600 or above.)
4. If copy is too light	4. Set impression lever to heavier impression setting. Check the ribbon; be sure it is moving through machine.
5. If type sticks in anvil (does not return to center after letter is struck)	5. Clean outside of anvil and the anvil slot. Clean both sides of type.
6. If feed rolls appear shiny or glossy	6. This usually means that the rolls have not been cleaned properly. Clean the rolls very well with a cloth, just dampened (not wet) with alcohol. Rub until the rolls look dull (not shiny).
7. If paper slips in feed rolls	7. Clean the rolls (but they may need to be serviced).

8.	If plates, such as offset plates, slip in feed rolls	8.	Some papers slip in rolls more easily than others. Apply a narrow strip of masking tape to the back of each vertical edge of the paper. Do not put tape near the typing.
9.	If machine does not justify	9.	Check the actuating bar lock. Pull lever out.
10.	If ruled lines do not join when using forms ruling attachment	10.	Check horizontal spacing lever to be sure it is set correctly for the forms segment.
11.	If carriage will not move	11.	Check to be sure the font is inserted properly in the anvil.
12.	If machine stops printing while typing	12.	Check the ribbon. It may not be moving through the wheels as it should be.

VOCABULARY:

actuate	-	ăk′ tū̮ āt	-	put something into action
service (v.)	-	sẽr′ vĭs	-	to work on something in order to put it in working order
trouble-shooting	-	trŭ′bl shōōt′ ng	-	finding the causes of trouble and fixing them

UNIT X - ACHIEVEMENT TEST

TRUE OR FALSE

____ 1. In differential spacing, the machine gives each letter just as much room as it needs.

____ 2. Some VariTypers use only standard spacing.

____ 3. There is a horizontal spacing lever on the right side of each machine.

____ 4. "DS" on a VariTyper means "double spacing."

____ 5. Four parts of the machine that are used in vertical spacing are:
   a. the Lineomatic dial
   b. the line-feed control lever
   c. the horizontal spacing lever
   d. the justifier dial

____ 6. Extra space between the lines of typing is called leading.

____ 7. You must type very fast on the VariTyper.

____ 8. The "removable" stop must be used when justifying the right margin.

____ 9. When using a VariTyper, the left margin is automatically straight.

____ 10. There is only one horizontal spacing lever. It is used for both standard and differential spacing.

UNIT X - VARITYPER

PROJECT

1. **Copy the straight-copy material on the next page.**

   Repeat until you can type it with no errors.

2. **Make one copy of Proofreading Numbers page.**

3. **Make one copy of the Personal Data sheet.**

4. **Make one copy of the Confidential Reference sheet.**

5. **Make one copy of Automatic Ruling page.**

SUMMER

When sunshine gleams through the window, when soft winds ruffle clothes and brightly colored flowers make a beautiful blanket for park grounds, the world is stricken with a peculiar, although not fatal, illness. Otherwise stable individuals note in themselves an irresistible wish to become completely irresponsible, to perform surprising actions. They wish to visit distant shores, to enjoy laziness under beautiful skies, to be without the responsibility or the duties of their usual everyday life. Happiness, so intense it can almost be touched, swoops down on everyone.

Vacations are the favorite subject of conversation while waiting for the time to pass until the vacation period. Pay checks are examined in hopes of locating an unsuspected addition that can make that hoped-for trip more possible. Tourist information floods homes and business places, while employees spend hours dreaming of future enjoyments.

Luncheon dates are often avoided, for the beautiful sunshine beckons everyone outdoors—to stroll down the thoroughfares or to acquire a flattering tan in the various parks that dot the cities. The necessity of returning to business duties at the end of the luncheon period is forgotten in the enjoyment of the outdoor relaxation.

Besides the short time spent in acquiring a tan at lunchtime, the citizens devote many more hours to this achievement. It takes on major importance, for many thousands of pale but hopeful persons flood the nearest shores of the turbulent ocean.

PROOFREADING NUMBERS

In proofreading numbers, use the following procedure, as described and illustrated.

EXPLANATION	NUMBER	PROCEDURE
Read double figures and use comma divisions whenever possible. Note the illustrations given here.	12	Twelve
	123	One twenty-three
	1234	Twelve thirty-four
	1, 234	One two thirty-four
	12, 345	Twelve three forty-five
	123, 456	One twenty-three four fifty-six
For numbers that are repeated, use the word "twice." For numbers appearing three or more times, use "three times," "four times," etc.	325	Three twenty-five---twice
	325	
	672	Six seventy-two---3 times
	672	
	672	
Refer to a cipher as a 0 (pronounced oh) or zero.	2-05	Two dash zero five---4 times
	2-05	
	2-05	
	2-05	
For consecutive numbers, read all the digits in the first number, but only the last two digits of the remaining numbers.	1950	Nineteen fifty, fifty-one, fifty-two, fifty-three
	1951	
	1952	
	1953	

PERSONAL DATA

Personal Information

Name ____

Address ______________________________________

Telephone No. _______________

Age __________ Weight __________ Height ________

Education

Name of School __________________________________

Typing Speed ____________________________________

Business Training Course ________________________
(No. of years)

Other machines __________________________________

____

Work Experience

Company ______________________________________

Address ______________________________________

Kind of job ____________________________________

From __________________ To __________________

References (Do not use names of members of your family)

Name ____

Address ______________________________________

Name ____

Address ______________________________________

Name ____

Address ______________________________________

CONFIDENTIAL REFERENCE

From: Miss Corinne Roberts
Address: N. J. School for the Deaf
West Trenton, New Jersey

Concerning Mrs. Jean Ellen (Perkins) DiMaio
Address 377 Comstock Street
New Brunswick, New Jersey

The above person has been employed by us on a trial basis and has authorized us to secure a confidential report from you. Will you please answer the following questions and return the blank at your early convenience? A self-addressed stamped envelope is enclosed for your reply. Your assistance is appreciated.

---

1. To your knowledge is there any reason why applicant would be unfitted for employment in an office where culture, good health, cleanliness, honesty, loyalty and responsibility, etc., are essential? ______________________

2. Was applicant ever short or in arrears in your accounts? ______________

3. Please check the following: ______________________________

	Exceptional	Good	Average	Fair	Poor
Ability in position					
Personal conduct					
Regularity in attendance					
Punctuality					
Reliability					
General health					
Prospects of development					
Cooperation					

4. Comments ____

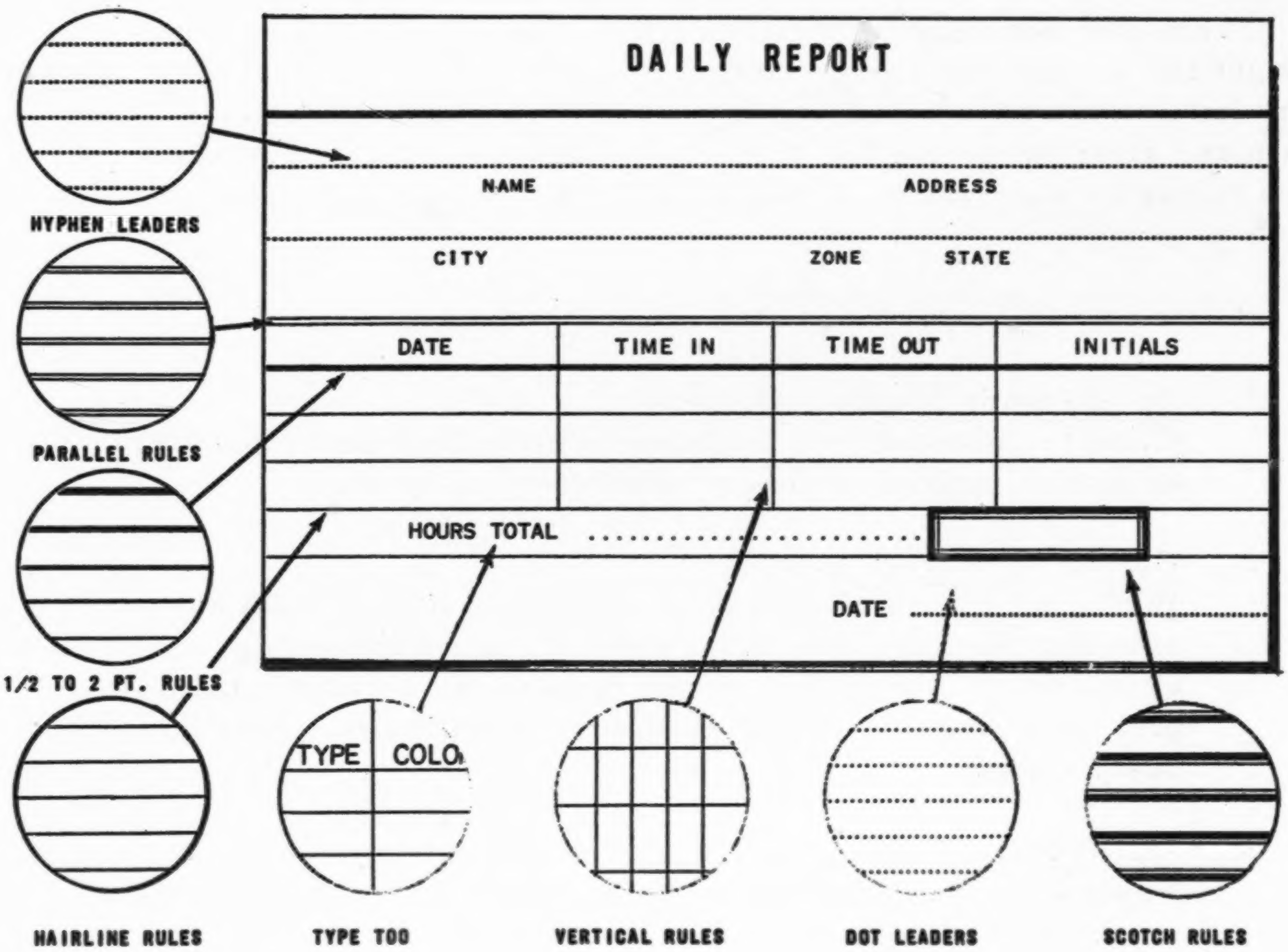
____

(Use other side of page if necessary)

Date ____________________ Signature ______________________

Title ______________________

AUTOMATIC RULING


DAILY REPORT
NAME
ADDRESS
CITY
ZONE
STATE
DATE
TIME IN
TIME OUT
INITIALS
HOURS TOTAL
DATE
HYPHEN LEADERS
PARALLEL RULES
1/2 TO 2 PT. RULES
TYPE
COLO
HAIRLINE RULES
TYPE TOO
VERTICAL RULES
DOT LEADERS
SCOTCH RULES

UNIT XI - JOB TITLES

Description of Jobs — Lesson 1

OBJECTIVE: To learn about some of the jobs that graduates of this course should be able to do.

INFORMATION:

There are two very important factors that you must give much thought to, so that you can get and keep a job. (1) You must do very good work here in school. (2) You must cultivate the right attitude. There are many girls preparing for these types of jobs, so that you must keep trying to learn the best way to do things and must practice as much as possible.

Below are some positions that you might find:

1. Bookkeeping Machine Operator
   Operates bookkeeping machine, with or without typewriter keyboard, and performs related clerical duties.

2. Clerk, General-B (Junior)
   Performs duties of simple or repetitive nature such as sorting, posting, checking, copying, and addressing envelopes. Duties performed require the ability to complete assignments with a minimum of difficulty. May do some typing.

3. Mail Clerk
   Processes incoming and outgoing mail. May operate related machines and equipment and perform other minor office duties.

4. Messenger
   Delivers letters, messages, packages, and other items within an establishment or to other concerns. May keep simple records and perform other minor office duties.

5. Key-Punch Machine Operator
   Records accounting and statistical data on tabulating cards by punching a series of holes in specified sequence, using a key-punch machine. May operate a verifying machine.

6. Addressing Machine Operator
Operates machine which uses stencils or platen for mechanical addressing of any type. May prepare original stencil or plate and is responsible for accuracy of the work.

7. Calculating Machine Operator
Primarily occupied in operating a machine that performs the arithmetic necessary for adding, multiplying, subtracting, and dividing.

8. Duplicating Machine Operator
Operates stencil-, fluid- (spirit-), or simple offset-type office duplicator. Responsible for mechanical operation and quality and accuracy of work. May prepare stencils or masters. Might also do collating, and sometimes binding.

9. File Clerk
Sorts, indexes, and files correspondence, cards, invoices, receipts, and other records; locates and removes material from file on request. May keep a record of material removed.

10. Typist-B (Junior)
Does typing of simple, routine nature, copying from plain printed or written material or corrected copy; does simple form letters, reports, charts; may cut stencils and address envelopes. Must be able to type accurately, with fair speed. Dictation not required.

11. Billing Machine Operator
Uses a typewriter and numerical keyboard. Must know how to work out some problems. Sometimes the numerical keyboard is used as a calculator.

12. Flexowriter Operator
Makes the tape and operates the machine to complete letters in quantity, or any forms. Probably would operate more than one machine at a time.

13. Graphotype Machine Operator
Types names and addresses on small plates (made of metal) that will later be used in an addressograph machine. Must be able to read handwritten names and addresses.

14. VariTyper Operator
Must be able to operate one of the many kinds of VariTypers. One kind of work would be setting up columns with a justified right-hand margin.

15. Inventory Clerk
Keeps a record on cards of everything that is in the stock closets. This would be done by adding and subtracting amounts that would come to the clerk on cards each day.

ASSIGNMENT:

Go over in detail each of these jobs; learn what they mean and how a student would prepare for a specific job.

VOCABULARY

The diacritical marks in this manual are taken from

WEBSTER'S NEW COLLEGIATE DICTIONARY

absorb	- ăb sôrb′	- to take in or soak up (liquids)
abuse (v.)	- ȧ būz′	- to use something in a way that causes harm or damage to it
accept	- ăk sĕpt′	- to receive, take willingly
accommodate	- ȧ kŏm′ ə dāt	- have room for, hold comfortably; also, help out
account	- ȧ kount′	- a record of any kind (money kept in a bank is an account).
acquaint	- ȧ kwānt′	- to tell someone about something - for example, how to operate a machine
activate	- ăk′ tĭ vāt	- make useful or active
activator	- ăk′ tĭ vā tẽr	- liquid in the photocopying machines necessary to make the picture show up
actual	- ăk′ tū̮ ȧl	- real, existing, true
actuate	- ăk′ tū̮ āt	- put something into action
additional	- ȧ dĭsh′ ŭn ȧl	- extra
adjust	- ȧ jŭst′	- to make a small change in something to make it right
alcohol	- ăl′ kō hôl	- a liquid without color and with many different uses in industry
align	- ȧ līn′	- get things in a straight line, line things up
angle	- ăng′ gl	- slant; a difference in direction between two lines
anvil	- ăn′ vĭl	- a strong, metal piece which can be struck without harm

Apeco	- a pe ko	- name of one wet photocopying machine
appear	- a per	- show up, come into sight
appearance	- a per ans	- how you look, how something looks
assign	- a sin	- to tell you that you have a certain job to do
asterisk	- as ter isk	- a small star used in typing to mean look somewhere else; also means total or all-clear on adding-machine tapes
attach	- a tach	- to fasten to, cling to, put together with something else
attack	- a tack	- to try to hurt; to begin to work with much strength (to attack a hard job)
attitude	- at i tud	- how you act about something
automatic	- o to mat ik	- self-acting, working by itself
auxiliary	- og zil ya ri	- helping; more to help the first
available	- a val ə bl	- that can be had, obtainable
average	- av er ij	- usual, ordinary
avoid	- a void	- keep away from, do not do something
balance	- bal əns	- the amount left in an account
bank	- bangk	- a horizontal row of something
bank (v.)	- bangk	- to push hard all the way to the margin or the stop
bantam	- ban təm	- small; name of a small model of the photocopier
bind	- bind	- fasten sheets of paper together; generally with a cover
bookkeeping	- book kep ng	- keeping an accurate record of business transactions
brisk	- brisk	- full of life, rapid

burnish	bûr′ nĭsh	to rub, to polish
calculator	kăl′ kū lā tər	a machine on which one may add, subtract, divide, or multiply
caption	kăp′ shŭn	heading, name at the top of something written
carriage	kăr′ ĭj	the long part on the top of the machine which moves from right to left and back again
cement	sē mĕnt′	a thick liquid that makes things stick together; a glue
character	kăr′ ăk tẽr	a letter, number, or sign in writing or in printing
check	chĕk	to prove something, make sure it is right, prove work by comparing it with something else
clamp	klămp	a small piece of metal having two ends that come together - for holding things together
clear	klēr	remove everything
clerical	klĕr′ ĭ kəl	having to do with office work
clockwise	klŏk′ wīz	in the circular direction that the hands of a clock go
clumsy	klŭm′ zĭ	having no skill, not graceful
code	kōd	a system where certain symbols stand for certain letters
collate	kŏl′ āt	arrange sheets of paper in their proper order
column	kŏl′ ŭm	something straight up and down; figures in a vertical line
combine	kŏm bīn′	to put together

Comptometer	kŏmp tŏm′ ə tər	a key-driven calculator
concave	kŏn kāv′	hollowed out, curved inward
concern	kŏn sûrn′	a business company; to concern oneself - to be interested in, to care
consider	kŏn sĭ′ dẽr	think carefully about something
condense	kŏn dĕns′	to bring together, to put together in a smaller space
connect	kȯ nĕkt′	join together, put together
contact(adj.)	kŏn′ tăkt	touching, pressed together
content (n.)	kŏn′ tĕnt	what is in a container what we will do in this class (often used in the plural - contents)
control	kŏn trōl′	something that lets you work a machine or a part of a machine in just the way you need it
cooperate	cō ŏp′ẽr āt	all work together, get along with others
Copease	kō′ pēz	name of one kind of wet photocopying machine
correct	kȯ rĕkt′	true, right
correction	kȯ rĕk′ shŭn	an error that has been made right
counterclock-wise	koun′ tẽr klŏk′ wīz	in a circular direction opposite to the way that the hands of a clock move
correspond	kôr ə spŏnd′	to be like another, match another
crease	krēs	fold over to make a sharp line
credit	krĕ′ dĭt	an entry of money to be added to an account
cultivate	kŭl′ tĭ vāt	think about something and practice it regularly
current	kẽr′ ĕnt	of the time now, at present

cushion	ko͝osh′ ŭn	a soft pillow to rest on
cylinder	sĭl′ ĭn dẽr	a round object with flat ends
data	dā′ tă	information, facts
debit	dĕb′ ĭt	an entry of money to be paid out of an account
decimal	dĕs′ ĭ măl	a part of a number, less than 1
decrease	dē krēs′	to make less, fewer
deduction	dē dŭk′ shŭn	anything subtracted
denote	dē nōt′	to mean a certain thing, to serve as a mark for something
dependability	dē pĕn′ dȧ bĭl′ ĭ tĭ	being the sort of person who can be trusted to do what she has said she will do
deposit (n.)	dē pŏz′ ĭt	an amount of something laid down, or put on something else
depress	dē prĕs′	to push down
design	dē zīn′	a piece of art work, a drawing or pattern
designate	dĕz′ ĭg nāt	to point out, to specify a certain thing; also to appoint someone
desirable	dē zīr′ ȧ bl	pleasing, agreeable, the way you would want it
desire	dē zīr′	to want very much, to wish for
device	dē vīs′	a small tool or machine made to help perform a particular job
dial	dī′ əl	a round face, often like a clock, that tells about something
differential	dĭf ẽr ĕn′ shȧl	having differences from each other
digit	dĭ′ jĭt	any one figure, like 0, 1, 2, etc.

directly	dĭ rĕkt′ lĭ	in a straight line, straight there, with nothing in between
disengage	dĭs ĕn gāj′	release, take away
dispose (of)	dĭs pōz′	to throw away, get rid of
dissolve	dĭ zŏlv′	to soak into a liquid, to disappear into a liquid
dividend	dĭ′ vĭ dĕnd	the number that is to be divided by another
division	dĭ vĭ′ zhŭn	the process of dividing one number by another
divisor	dĭ vī′ zẽr	the number that you divide by
dual	dū′ ȧl	two, double
dummy	dŭm′ ĭ	not the real thing although it looks like the real thing
duplicate	dū′ plĭ kāt	to make an exact copy of something
eager	ē′ gẽr	wanting to do something very much
efficient	ĕ fĭsh′ ĕnt	with no wasted time nor materials
electronic	ĕ lĕk trŏn′ ĭk	having to do with electrons (very, very tiny charges of electricity)
element	ĕl′ ĕ mĕnt	the part of the Selectric typewriter that has the type on it
eliminate	ē lĭm′ ĭ nāt	to remove, get rid of, leave out, omit
elite	ĕ lēt′	small, tiny; very special
emboss	ĕm bôs′	to raise above, to ornament
emerge	ē mẽrj′	come out
employee	ĕm ploi ē′	a person who works for someone else
employer	ĕm ploi′ ôr	the person who hires others, the boss

enamel	ĭ năm′ l	a coating that is shiny and very smooth
engage	ĕn gāj′	to fit into, to interlock
enter	ĕn′ tẽr	to press down (or index) numbers on a machine
entry	ĕn′ trē	any number put in a machine; any one thing entered into a book
equally	ē′ kwəl ĭ	in the same amount, so as to be equal
equipment	ē kwĭp′ mĕnt	what you use to work with; what you use for each job
establishment	ĕs tăb′ lĭsh mĕnt	a business house; any large or important organization
evaporate	ē văp′ ō rāt	to disappear by going into the air, where it cannot be seen
exact	ĕg zăkt′	strict, accurate, without any error
exception	ĕk sĕp′ shŭn	an unusual one that does not follow the usual rule
expand	ĕcks pănd′	grow bigger, spread out
expensive	ĕks pĕn′ sĭv	costing a high price
expose	ĕks pōz′	uncover, show openly, allow light to reach
exposure	ĕks pō′ zhẽr	being open to light, being shone on by light
extend	ĕks tĕnd′	stretch out, make longer
extensively	ĕks tĕn′ sĭv lĭ	widely, largely, to a great extent
extremely	ĕcks trēm′ lĭ	very; much more than usual
factor	făk′ tẽr	one particular part of a larger situation or problem

familiar	fȧ mĭl′ yẽr	knowing something well
feature	fē′ tū̮r	something special about a thing; something that stands out and attracts attention
film	fĭlm	a thin covering over something
final	fī′ nȧl	the last, with no more after it
firm	fûrm	hard, solid, steady
flexible	flĕck′ sĭ bl	can be easily changed or made different
Flexowriter	flĕks′ō rī tẽr	an automatic machine that types like a typewriter from a tape
fluid	flo͞o′ ĭd	liquid, usually thin, like water
fluorescent	flo͞o ō̇ rĕs′ ənt	a certain type of light bulb - a long, thin tube that glows softly when lit
Friden	frē′ dĕn	maker of the Flexowriter and calculators
font	fŏnt	in printing, a complete set of type in one size and style
gear	gēr	a part of a machine with small teeth; when it moves, it makes other parts move a certain way
Gestetner	gĕs tĕt′ nẽr	name of a mimeograph machine
graciously	grā′ shŭs lĭ	with a pleasing manner; with a nice attitude
grimy	grīm′ ĭ	dirty, greasy
gross	grōs	whole (pay or any amount), before anything is deducted from it
grommet	grŏm′ ĕt	a small ring, an eyelet
guide (n.)	gīd	a small thing that helps you to place something just where it should go

Hermes	hẽr′ mēz	name of a typewriter
hesitate	hĕz′ ĭ tāt	to stop or wait a very short time
Heyer	hī′ẽr	name of a fluid duplicator
hinder	hĭn′ dẽr	to keep someone from succeeding or making progress
hint (n)	hĭnt	an idea that you get across without coming out directly and saying it
horizontal	hôr ĭ zŏn′ tȧl	from side to side; across
hurriedly	hûr′ ĭd lĭ	fast, in a hurry
IBM	ī′ bē′ ĕm′	name of a company that makes typewriters and other machines
identify	ī dĕn′ tĭ fī	to show what something is; to show that a thing is what you say it is
ignore	ĭg nôr′	pay no attention to
illustration	ĭl ŭs trā′ shŭn	a picture of something; or anything shown you to make something clear
image	ĭm′ ĭj	a copy or likeness or picture of something
imagery	ĭm′ ĭj rĭ	pictures in your mind
imaging	ĭm′ ĭj ng	making a copy, like a photograph
immediate	ĭm ē′ dĭ ĭt	next in line, with no one in between
immediately	ĭm ē′ dĭ ĭt lĭ	now, at once
impression	ĭm prĕsh′ ŭn	something produced by pressing - a mark, a stamp, or imprint
improve	ĭm pro͞ov′	make better
increase	ĭn krēs′	to make more or larger
increment	ĭn′ krĕ mĕnt	a small amount added on; a very small increase in size

independently	ĭn dē pĕn′ dĕnt lĭ	by yourself, with no help from others
index	ĭn′ deks	to press down the proper keys for the number you want; to mark in such a way that someone would know where to file a thing
indicate	ĭn′ dĭ kāt	to point out, to show, to suggest
indicator	ĭn′ dĭ kā tẽr	something that shows or points out
individual	ĭn dĭ vĭd′͜ū àl	only one; a single thing or person
information	ĭn fôr mā′ shŭn	facts; the things you are being told
ingredient	ĭn grē′ dĭ ĕnt	one of the parts of a mixture; one of the things that something is made of
initiative	ĭ nĭsh′ ĭ ȧ tĭv	going ahead "on your own," thinking up your own ideas; if there is no one to tell you, you find something to do
insert	ĭn sûrt′	to set or put in; to put between two other things
inset	ĭn′ sĕt	something put in or set in
instruction	ĭn strŭk′ shŭn	teaching, giving directions
intelligently	ĭn tĕl′ ĭ jĕnt lĭ	using your thinking ability; as if you are thoughtful and wise
inventory	ĭn′ vĕn tôr ĭ	a count or list of what a business has
jam (v.)	jăm	to squeeze tightly together, to crush together
justify	jŭs′ tĭ fī	to type or print lines so that all are exactly the same length
knob	nŏb	something small that sticks out, like a lump; door handle
Kodak	kō′ dăk	short for Eastman Kodak - a company that makes cameras and other machines, including the Verifax photocopier

layout	lā′ out	an arrangement of things showing how they will look in the finished copy
leading	lĕd′ ng	in the printing trade, a thin strip of type metal, used to separate lines of type
legal	lē′ gəl	about the law; according to law; the size of paper that is used for legal work
lever	lē′ vẽr	a rather long, hard piece of material, attached on one end; it will move a larger object
Lineomatic	līn′ ō mă′ tĭk	a part that can be set so that the lines will be as far apart or as close together as you want them
liquid	lĭk′ wĭd	something that flows like water
list	lĭst	to write or print words or figures in a column
manual	măn′ ū ȧl	operated by hand, not by electricity
manufacturer	măn ū făk′ chər ər	the owner of a company that makes goods, or the company itself
Marchant	mär′ shănt	name of a calculator
master	măs′ tẽr	the original paper that is put on duplicator; the master for a mimeograph is a stencil
materials	mă tēr′ ĭ ȧlz	the things you need, to do a certain job
matrices	mā′ trĭ sēz	one plural of matrix
matrix	mā′ trĭks	a shiny, smooth paper used in copying machines. It is sensitive to light
measure (v.)	mĕzh′ ẽr	to find out how much, or how long, or how many, by using some standard to check by
measurement	mĕzh′ ẽr mĕnt	a quantity; how much or how many or how long
mechanical	mĕ kăn′ ĭ kȧl	done by a machine; having to do with machinery

mechanism - mĕk′ ȧ nĭsm - the parts of a machine that make a certain thing happen

memory - mĕm′ ə rĭ - ability to remember; what you remember

message - mĕs′ ĭj - a letter or notice from one person to another

method - mĕth′ ŭd - a way of doing something, usually an ordinary way, with thought

microfilm - mī′ krō fĭlm - a very, very small film

mimeograph - mĭm′ ē ō grăf - a kind of duplicator that can make many copies

mimeoscope - mĭm′ ē ō skōp - a glass-topped table with a light under it, used for tracing

minimum - mĭn′ ĭ məm - the least amount possible

minor - mī nẽr - less important

model - mŏd′ ĕl - style, the way a thing is made (automatic model, etc.); also, something correct or proper that should be copied or imitated

moisten - mois′ n - to make slightly wet or to dampen

Monroe - mŏn rō′ - name of a company that makes adding machines and calculators

multiple - mŭl′ tĭ pl - more than one

multiplicand - mŭl′ tĭ plĭ kănd′ - the number that is being multiplied by another

multiplier - mŭl′ tĭ plī ẽr - the number used to multiply by; it makes another number larger

natural - năt′u̮ ràl - as it really is - not changed; made by nature, not by man

negative - nĕg′ ȧ tĭv - opposite from the way you want it: in photography, a black picture with white letters; a "no" answer

non-	nŏn	prefix, means "not"
normal	nôr′ mȧl	in the way something always has been; in the usual way
notation	nō tā′ shŭn	a mark, a word, or initials (something short) written down
notch	nŏch	a V-shaped cut or gap
nub	nŭb	knob, a small piece that sticks out
numerical	nū mĕr′ ĭ kȧl	having to do with numbers
objective	ŏb jĕk′ tĭv	the thing you want to know or learn; what you are aiming at; where you want to go
Odhner	ŏd′ nẽr	name of adding and calculating machines
offset	ôf′ sĕt	a printing process in which the inked copy is transferred to a rubber plate before being printed on the paper
Olympia	ō lĭmp′ ē ȧ	name of a typewriter
operate	ŏp′ ə rāt	to make something go, to make a machine work
ordinary	ôr′ dĭ nĕ rĭ	usual, regular, customary
original	ō rĭj′ ĭ nəl	first, earliest; not a copy
ornament	ôr′ nȧ mĕnt	something beautiful, a decoration
organize	ôr′ găn īz	to arrange things, get them in good order
palm	päm	the inside of the hand
particular	pẽr tĭk′ ū lẽr	separate, special
particularly	pẽr tĭk′ ū lẽr lĭ	especially, chiefly, most of all
payroll	pā′ rōl′	the amount of money needed to pay all the employees working in one place
perforate	pûr′ fô rāt	to make rows of small holes

performance	pẽr fôr′mĕns	doing, working, acting
permanent	pûr′ mă nĕnt	lasting for a very long time; not meant to be changed
photo	fō′ tō	short for "photograph"
photocopier	fō tō kŏ′pĭ ẽr	a business machine that duplicates material by using light
photocopy	fō′tō kŏ pē	a picture of typed, written, or drawn material; a copy of any paper needed
photograph	fō′ tō grăph	a picture made by a camera
phrase	frāz	a few words that belong together; a short part of a sentence used as a single word
pivot	pĭv′ ĕt	a point on which something may turn
pinwheel	pĭn′ whēl′	small wheel with sharp points
platen	plă′ tĕn	round roller on a machine, which carries the tape or paper in position for working
plot (v.)	plŏt	to mark the position of something; to plan
pointer	point′ ẽr	a long tapering piece, to point with
porous	pô′ rŭs	full of very tiny holes, so that liquids go through it quickly
portable	pôr′ tȧ bl	can be moved, carried
position (n.)	pō zĭsh′ ŭn	a place; a spot
position (v.)	pō zĭsh′ ŭn	to put something in the place where you want it
positive	pŏz′ ĭ tĭv	just the way you want it - black on white. The opposite of negative
post	pōst	to transfer an entry from one record to another
precede	prē sēd′	go before; come before something else

precision	prē̇ sĭzh′ ən	exactness, accuracy
prefer	prē fẽr′	to like better, to want one thing more than another
prepare	prē pâr′	to make ready
press	prĕs	push against, hold between two objects, make flat
pressure	prĕsh′ ẽr	continued pushing, pressing
previous	prē′ vĭ ŭs	before, at an earlier time
primarily	prī mĕr′ ĭ lĭ	in the first place, of the most importance
print	prĭnt	to make numbers, words, etc. with type and ink
probably	prŏb′ ə blĭ	likely to be so; we think so
procedure	prō sē′ dūr	how to do something: what comes first, second, etc.
process	prŏ′ sĕs	a set of actions in a particular order
process (v.)	prŏ′ sĕs	to prepare something for what has to be done to it; to put a thing through a certain procedure
produce	prō do͞os′	to make; to bring out
product	prŏ′ dŭkt	answer to a multiplication problem; also, something that has been made (produced)
professional	prō̇ fĕsh′ ŭn əl	so good that it looks as though it had been done by a real expert
project (n.)	prŏ′ jĕkt	something planned to do; planned work; a special job
projector	prō̇ jĕk′ tẽr	a machine that shines a picture on a screen
prolong	prō lông′	to make longer
prompt	prŏmpt	on time, or ahead of time

properly	prŏ′ pẽr lĭ	correctly, in the right way
proportional	prō pôr′ shŭn əl	according to size, one size in relation to another
protrude	prō trōōd′	stick out
punch	pŭnch	to poke, to make a hole sharply
punctuation	pŭngk tū̮ ā′ shŭn	a mark that separates words or phrases in a sentence
quotient	kwō′ shŭnt	the answer to a division problem
rack	răk	a bar or frame that holds things
ratchet	răch′ ĭt	a wheel with teeth on it that come against a catch, so that it can turn in one direction but not the other
rate (v.)	rāt	to see how good someone is, and how she compares with others
receipt	rē sēt′	a written statement that money, a package, a letter, etc., has been received
receptionist	rē sĕp′ shŭn ĭst	a person whose job is to greet people and help them
record (n.)	rĕk′ ẽrd	any information that is written down and kept
regular	rĕg′ ū lẽr	usual, customary, as it is most of the time
remainder	rē mān′ dẽr	what is left over
related	rē lā′ tĭd	connected with something, having a lot to do with something
relationship	rē lā′ shŭn shĭp	connection from one to another (like a teacher's relationship to pupil)
Remington	rĕm′ ng tŭn	name of typewriter and other machines

remove	- rē mo͞ov′	- to take away
repetitive	- rĭ pĕt′ ĭ tĭv	- repeating over and over
reposition	- rē′ pō zĭsh′ ŭn	- to put back to the first place or spot
responsibility	- rē spŏn′ sĭ bĭl′ ĭ tĭ	- being willing to do what needs to be done; acting in a grownup rather than a childish manner; understanding what is right and doing it
Rex Rotary	- rĕks′ rō′ tȧ rē	- name of a mimeograph machine
rotary	- rō′ tȧ rē	- turning around, like a top or a wheel
rough	- rŭf	- not finished, needs to be made better, smoother
routine	- ro͞o tēn′	- anything done in the same way over and over
Royal	- roi′ ȧl	- name of a typewriter
script	- skrĭpt	- a kind of handwriting
sector	- sĕk′ tẽr	- a bar that holds the numbers that are printed by printing calculator
segment	- sĕg′ mĕnt	- a part of a whole; a section of something
select	- sĕ lĕkt′	- to pick out, to choose
Selectric	- sĕ lĕk′ trĭk	- name of one of the electric typewriters
sensitive	- sĕn′ sĭ tĭv	- feeling something quickly, easily hurt by something
sequence	- sē′ kwĕns	- the order in which one thing follows another
series	- sēr′ ĭz	- a number of similar things coming one after another
service (v.)	- sẽr′ vĭs	- to work on something in order to put it in working order

several	sĕv′ẽr ȧl	a few; more than two, but not very many
shadow	shă′ dō	an image of a real thing; the dark place on the ground when something stands in the sunlight
shift	shĭft	to move or change
similar	sĭm′ ĭ lẽr	almost the same, nearly alike
simultaneously	sī mŭl tā′ nē ŭs lĭ	happening at the same time
siphon	sī′ fŏn	a bent tube used to carry liquid up and over the top edge of a container; it causes the liquid to run up
slight	slĭt	very small
slot	slŏt	a long and narrow opening, something like a keyhole
smear	smēr	a dirty-looking spot caused by fresh typing being rubbed, or a poorly done erasure
Smith-Corona	smĭth′-kŏ rō′ nȧ	name of a typewriter
smudge	smŭj	same as smear, a dirty spot
socket	sŏk′ ĭt	an empty little place into which something fits
solution	sŏ lo͞o′ shŭn	the liquid used in wet copying machines
solve	sŏlv	find the answer
source	sôrs	a person, book, or statement that supplies information; also a beginning, a place where something starts
specific	spĕ sĭ′ fĭk	definite, certain, exactly as wanted
specify	spĕs′ ĭ fī	to name very definitely, to tell exactly
spirit	spĭ′ rĭt	a particular kind of liquid that contains alcohol

squeegee	skwē′ jē	a soft rubber blade, like a windshield wiper
staccato	stȧ kä′ tō	quick, short, clear-cut
stack	stăk	a pile, something piled up
standard (adj.)	stăn′ dẽrd	most commonly used, in the regular manner, not special; as, standard spacing, or a standard typewriter
standard (n.)	stăn′ dẽrd	something used to measure or judge other things against ("Her typing set the standard for the class")
stencil	stĕn′ sĭl	a paper or thin sheet of metal that can be placed on a certain machine for duplicating
styli	stī′ lē	plural of stylus, more than one
stylus	stī′ lŭs	the tool used to draw or write on a stencil
subtotal	sŭb′ tō təl	the total this far, but more will be added
superior	sōō pēr′ ĭ ər	better, far above; also, a person who is over you in a job
supervisor	sū′ pẽr vī zẽr	a person over you in a job, who can instruct you
support	sŭ pôrt′	to hold up
surface	sûr′ fĭs	the outside of something
switch	swĭch	a small lever that turns something on or off
switchboard	swĭch′ bôrd	where the telephone operator gets all calls from the outside and through which all calls from the office go
symbol	sĭm′ bəl	a small mark that means something else
tabulate	tăb′ ū lāt	arrange facts or figures in tables or lists

tape	- tāp	- a long and narrow strip, usually of paper or cloth
teller	- tĕl′ ər	- a person who works in a bank receiving, paying, and counting money
temperament	- tĕm′ pẽr ȧ mĕnt	- the way you generally feel about things and people
temperature	- tĕm′ pẽr ȧ chẽr	- how cold or how warm anything is
term	- tûrm	- a name for something, a word
theory	- thē′ ȯ rĭ	- learning to know about things (rather than learning by doing)
thermometer	- thẽr mŏm′ ĕ tẽr	- what is used to find the temperature of something
thumbscrew	- thŭm′ skrōō′	- a screw with a head that can be turned with the thumb and first finger to fasten two things together
thumbwheel	- thŭm′ whēl′	- a wheel that can be turned by the thumb and finger
tilt	- tĭlt	- tip a little, slant part way over
timer	- tīm′ ər	- a small controlling machine that can be set for a certain amount of time
tissue	- tĭsh′ ū	- a very thin paper
total	- tō′ təl	- whole, entire, all, complete
trace	- trās	- to make a duplicate of something by following its lines on a sheet placed over it
transaction	- trăn zăk′ shŭn	- a piece of business
transfer	- trăns fûr′	- to take something from one place and move it to another
transpose	- trănz pōz′	- to change places, to make the first, the last

tray	trā	flat piece usually with a rim around it, for holding or carrying things
trimmer	trĭm′ ẽr	a knife that cuts off small amounts from around the edge
T-square	tē′ skwãr′	a tool shaped like a long ruler in the shape of a T, used to make straight lines and exact corners
twirler	twẽr′ lẽr	a person or an object that moves around rapidly
Typamatic	tīp ȧ mă′ tĭk	a name given to a repeat key on certain electric typewriters
underscore	ŭn′ dẽr skôr	same as "underline," to make a line under something
Underwood	ŭn′ dẽr wo͝od	name of a typewriter and other machines
uniform	ū′ nĭ fôrm	same, all alike
unit	ū′ nĭt	one part; one amount; one thing; a group of things or people thought of all together, as one
value	văl′ ū	how much something is worth
vari	vâr′ ĭ	when used to begin words, means more than one, various
variable	vâr′ ĭ ȧ bl	changeable, can be made different
various	vâr′ ĭ ŭs	more than one; several that are different from each other
VariTyper	vâr′ ĭ tī pẽr	a machine similar to a typewriter. It can use many different kinds and sizes of type
vary	vâr′ ĭ	be different, to change, to make different
Verifax	vĕr′ ĭ făks	name of a wet photocopying machine made by Eastman Kodak Co.

verify	vĕr′ ĭ fī	prove something to be true; check the correctness of something
versatile	vẽr′ sȧ tĭl	able to do many different things
vertical	vẽr′ tĭ kȧl	the up-and-down direction
Viscount	vī′ kount	name of the legal-size model of the Verifax photocopier
visible	vĭz′ ĭ bl	can be seen
wise	wīz	knowing many things, and doing many things right
wrinkle	rĭng′ kl	a line, or a mark, where there should not be any, where something is not smooth
Xerox	zēr′ ŏks	name of a dry phctocopier

MACHINE PROJECTS I HAVE COMPLETED

	Date Completed	Grade
Adding Machines		
Monroe Full-Keyboard		
Monroe 10-Key		
Calculating Machines		
Friden Fully Automatic Rotary		
Remington Rand 10-Key Printing		
Duplicating Machines		
Friden Flexowriter		
Heyer Spirit Duplicator		
Kodak Verifax Signet Copier		
Kodak Verifax Viscount Copier (Legal Size)		
Rex Rotary Mimeograph		
Roneo Mimeograph		
Posting Machines		
Underwood-Olivetti 10-Key		
Typewriters		
Electric Standard		
Electric Executive		
Manual Standard		
VariTyper		

BIBLIOGRAPHY

A. B. Dick, Techniques of Mimeographing, Chicago, 1963

Agnew, Peter L., Meehan, James R., and Loso, *Clerical Office Practice,* 2nd edition, Cincinnati: South-Western Publishing, 1955

----, *Office Machines Course*, 2nd edition, Cincinnati: South-Western Publishing, also Teachers' Manual, 1965

Anderson, Ruth and Leonard Porter, *130 Basic Typing Jobs,* Englewood Cliffs: Prentice Hall, 1960

Archer, Fred C., Brecher, Raymond F., and John C. Frake, General Office Practice, New York: Gregg Publishing, 1958

Barron, Allen E., and James R. Taylor, *Clerical Office Training,* Englewood Cliffs: Prentice-Hall, 1963

Carlson, Paul A., Forkner, Hamden L. and Alva Prickett, *20th Century Bookkeeping and Accounting,* Cincinnati: South-Western Publishing, 1962

Eastman Kodak Company, Verifax Copy Guide, Rochester, N. Y.

Eastman Kodak Company, How to Use the Verifax Copier Legal Size, Rochester, N. Y.

Eastman Kodak Company, Verifax Instruction Booklet, Rochester, N. Y.

Friden, Incorporated, Flexowriter Manual of Instructions. San Leonardo, 1959

Fridan, Incorporated, Instruction Manual for Full Automatic Calculation, 1963

Friden, Incorporated, Classroom Manual for Friden Automatic Calculator, 1958

Friedman, Sherwood and Jack Grossman, *Modern Clerical Practice,* New York: Pitman Publishing, 1959

----, *Applied Clerical Practice*, New York, 1962

Hossfield, George and Julius Nelson, *Brief Typing,* Baltimore: The H. M. Rowe Company, 1957

International Business Machines, A Key to Better Typing, Executive, New York City: 1959

----, A Key to Better Typing, Standard, New York City: 1959

----, A Short Course in Electric Typewriting, New York City: 1960

Klein, A. E., The Remington Rand 10-Key Adding Machine Office Practice Course, New York: Remington Rand, 1959

Lessenberry, Crawford and Erickson, 20th Century Typewriting, 7th edition, Cincinnati: South-Western Publishing Company, 1957

----, 20th Century Typewriting, 8th edition-1962

Monroe Calculating Machine Company, Inc., Operating Instructions for Model 408, Orange, New Jersey, 1951

Monroe Calculating Machine Company, Inc., Monroe 10-Key Adding Machine Operating Instructions, Orange, New Jersey: 1953

Piper, Edwin P., Gruber, Joseph, and Preston E. Curry, Applied Business Arithmetic, Cincinnati: South-Western Publishing Company, 1959

Fisher, Harrison, Today's Business Machines, Chicago: American Technical Society, 1959

Remington Rand, Machine Station Manual and Student Workbook for Model 99 Calculator

----, Student Workbook, Model "99", A Handbook for the Calculator that Prints

VariTyper Corporation, VariTyper Operator's Manual, Newark, N. J.
----, VariTyper Operator's Instruction and Reference Manual, Newark, N. J.
Wamous, S. J., Statistical Typing - 2nd edition, Cincinnati: South-Western Publishing Company, 1956

Walker, Arthur, Roach, J., and Kenneth and Hanna J. Marshall, How to Use Adding and Calculating Machines, 2nd edition, New York: Gregg Publishing Division, McGraw-Hill Book Company, 1960

Webster's New Collegiate Dictionary, Springfield: G & C. Merriam Co., 1960

White, Walter T., Typing for Accuracy, 5th edition, Baltimore: The H. M. Rowe & Company

Wood, Marion, Electric Typing, New York: Gregg Publishing Division, McGraw-Hill Book Company, 1962